

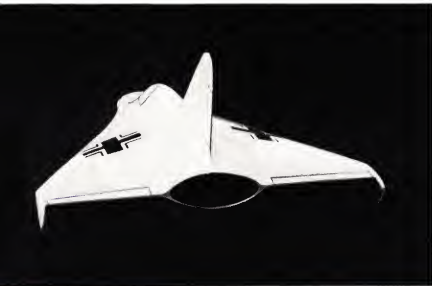
Aviation News

McGRAW-HILL PUBLISHING COMPANY, INC.

AUG. 27, 1945



German Supersonic Plane Model—Aircraft exceeding speed of sound may be similar in appearance to this wind-tunnel model of the Jaeger P-13, a revolutionary ram jet, all-wing design found in Germany by U. S. experts. Designed by Alexander Lippisch, who also designed the Messerschmitt 163 rocket plane, this model had been tested and a prototype was under construction when the war ended. It was to be powered by a Lorin jet unit. The pilot would occupy a cockpit near the front air ducts. Some hope was held for a maximum speed of 500-mph. Several other experiments with this general configuration are under way, but no craft of this general design has yet flown. (See story Page 14.)



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AAF Asks 3,800 Planes In 1945

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THERE'S A NEW STANOARD IN AIR TRANSPORTATION!

Lockheed Constellation

Lockheed Aircraft Corporation, Burbank, California  *There's ahead in the science of flight*



Washington Observer



END OF LEND LEASE—Termination of Lend-Lease shipments has created a question of prime importance to the aviation industry—how many airplanes will be left in the lend-lease "pipeline" and what will be done with them? Surplus aircraft stocks are piling up by the day and with the surplus airplanes are surplus engines, both in the crash and in the spare-engine pipeline. The already pressing surplus problem will be even more so if lend-lease planes still in the pipeline are added to the pile. Disposition will have an effect on the entire industry.

ALTERED CIRCUMSTANCES—Even since the Jap surrender, the AAF and Navy continue to receive a considerable number of requests from aircraft manufacturers for assistance in filling critical shortages of materials. While many of these requests probably were indicated prior to the end of hostilities, some officials in Washington regard them, in some instances, as attempts to aid in reconversion. Consequently, the services are returning most of these requests with the suggestion that the matter be reviewed in the light of somewhat altered circumstances.

TIGHTENING-UP—One factor in the current CAA situation is the desire of top Commerce Department officials to take more careful supervision over that agency. This is not due to any misgivings about Administrator T. F. Wright. On the contrary, Wright has full support of Commerce executives and their blessing in exercising free administrative rein. However, Secretary Wallace and his chief advisers feel CAA has too long operated in effect, as an independent agency.

EIGHTY INTO ONE—The same attitude prevails toward all of Commerce's bureaus. One official comments that in the past the department has consisted of eight autonomous bureaus. In reality, all, like the CAA are supposed to function within the framework

of the department and there is a definite trend now toward integrating all to an overall policy.

FOREIGN AIR BASES—While Navy spokesmen on Capitol Hill are deriding for U. S. commercial and military rights to bases in the Pacific, members of the Senate's Mand Investigating Committee are pushing for U. S. rights to air bases in Europe. The Air Force furnished the committee a list of 370 air bases constructed in the European theater, but was able to approximate expenditure on only 36 percent of the total. An investment of \$413,804,050 was reported for the 36 bases. There will be considerable discussion of this subject in Congress in coming weeks.

SURPLUS HEARING—Hearings will open this week on Capitol Hill on President Truman's recommendation for a one-man administrator for the Surplus Property Board and other proposed changes in the 1944 surplus property act. Rep. Carter Muzzey (D-Ala.), chairman of a House Banking and Currency subcommittee handling the proposed legislation, favors the single administrator, abolition of many of the restrictions on a swift disposal of war plants, and removal of existing "priority" rights on purchase of surplus property. There is opposition to the single administrator proposal and whether SPB revision legislation will be expeditiously enacted by Congress still appears questionable.

MANPOWER CERTIFICATIONS—There will be no further certification of essential workers in aircraft plants and all existing certifications will expire by Sept. 16. The Interagency Committee on Manpower has decided that the aircraft industry will have no special treatment, should Selective Service continue at its present rate, and that technical personnel will be subject to selective service as well as other hazardous essential workers.



The German Ju-287, first jet heavy bomber to be built



American Business is Growing Wings

MAKING America strong in the air, and thereby assuring National Security, is a program which will have the wholehearted cooperation of American Business as well as the support of John Q. Citizen, Government, and the Aircraft Industry. And American Business, giving this support, will of course gain many benefits from the conversion of our increasing aviation skills and capacities to the ways of peace.

Just as aviation has helped to solve the problems of logistics in wartime,

so will aviation provide industry and business with new tools for shrinking the distance between markets, for opening new channels of distribution, and for achieving quick and ready access to any part of the world in a matter of hours.

As industry takes advantage of the facilities offered by aviation in the days ahead, it will thereby contribute to the further development of aeronautical science in America—for example, by using such new strength as the development of man assignments for which

this craft is especially adaptable and useful.

For these and many other reasons, American Business will do its part to make our Nation a great peacetime air power, working for Security and Permanent Peace.

At Bell Aircraft, we shall continue to make the research and research that helped to develop many of our nation's aerial weapons to establish aviation and air power as a partner in progress to Business and to all mankind.

★ *Buy War Bonds and Spend Wisely* ★

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Engine 5, H. T.

Variable (F3B) and Kingfisher (F4B)—Fighter Aircraft—America's First Jet Propelled Plane

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Florida Gun Mounts and other military materials

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Bell Bell B-29 Superfortress

BELL Aircraft
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VOLUME 1 • NUMBER 5

Aviation News
McGraw-Hill Publishing Co., Inc.

Aug. 27, 1945

AAF Alone Asks 3,800 Planes By Year End; Experiments Kept

Plan by plant schedule summary shows most builders with work set; experimental and development contract retention highlights immediate future; 6,900 Army craft seen needed during next 16 months.

By SCOTT HERSHEY

Current aircraft production schedules, according to best available estimates, indicate an output of military aircraft for the AAF alone of about 3,800 planes the rest of this year, with Navy figures still to be added, and with scheduling estimates through 1946 indicating production for the Army of approximately 6,900 planes for the next 16 months.

The Navy's outlook and cancellation schedule has been delayed in official channels, and estimates on its program are lacking. But estimates on Army output show second 688 for next month, 280 for October and 200 each for November and December. This same estimate by industry sources set Army production for next year at slightly over 200 a month for the first five months and somewhat under 300 for the remainder of the year.

Settlements—Total Army and Navy contracts awaiting settlement at the end of July amounted to \$10,815,903,890 with the Army's total \$13,358,888,556 and the Navy's \$4,115,606,066.

The AAF contracts awaiting settlement include \$2,900,900,000 in fixed price contracts and \$4,628,988,846 in cost plus fixed fee contracts with estimated August cancellations set at \$3,590,160.

Navy's Bureau of Aeronautics contracts awaiting settlement include \$338,000,000 fixed price and \$265,000,000 in cost plus fixed fee contracts with estimated August cancellations set at \$3,590,160.

High Point—Retention of experimental and development contracts appears to be the high point in the crystallizing picture of the immediate future of the aircraft man-

ufacturing industry so far as service contracts are concerned.

Definite trends are now beginning to be established which show that while cutbacks are deep and cancellations sharp, most of the basic aircraft manufacturers and have naval and military schedules to complete which will not cut production short in their home plants.

It should be emphasized, however, that the estimated figures are subject to change, depending upon occupation assignments of the air forces, the size and nature of the post-war air forces and, of course, the funds made available by Congress.

Best available figures at this time show this picture of Army contractors:

► Bell, Atlanta: Boeing B-29's out after a production of 61 in September compared to 93 scheduled for August.

► Boeing, Renton: B-29 schedule drops from 155 in August to 122 in September and then tapers off to 23 in month.

► Boeing, Wichita: B-29's drop from 166 scheduled in August to 60 in September when cancellation will involve about 1,234 planes.

► Martin, Omaha: B-29 schedule was 50 for August, dropped to 30 in September and then cut: about 730 planes cancelled.

► Consolidated, Fort Worth: B-22 schedule for August was 18, the rest cancelled—involving about 72 airplanes.

► Consolidated, San Diego: B-22 schedule called for one in August, contract completed.

► North American, Kansas City: B-29 August schedule was 115. About 248 planes cancelled.

► Douglas, Tulsa: A-26, with a schedule for 3 in August, 3 out in September—involving about 497 planes.

► Douglas, Long Beach: A-26, set in September, as against a schedule of 108 for August.

► Lockheed, Burbank: P-38 out in



No Place in Gas: B-25 Mitchell bombers on the fuel cannister line at North American Aviation, Inc., Kansas, which will be turned over to AAF for disposition.

Further CAA Changes Seen As Special Probe Continues

More resignations and reassignments expected; two more regional administrations believed subject to Department of Commerce committee investigation on basis of reported "irregularities."

By WILLIAM KROGER

Resignations and reassignments within CAA will increase, it was felt last week as a three-man investigating committee delved deeper into the administration of CAA regional inspectors.

The committee, appointed by the Department of Commerce, already has directed formal charges and criticism at seven officials of Region 1 (Atlantic States, August 28). Industry circles anticipate that corrective action will not long be delayed in respect to Regions IV and V.

Resignations Asked—In Region I, which includes the entire East Coast from Maine to Virginia, two officials have been asked for their resignations. One is Glen P. Harwood, regional administrator with offices in New York. Two others have been charged with malfeasance, and three more have been transferred to other posts. According to CAA, the transfers were rare because of "personality clashes" than because of any misconduct.

As listed by CAA, the charges include:

1. Improper issuance of airmen's certificates. There were instances in which it was alleged that commercial certificates and horsepower ratings were issued with flight tests of the applicants.

2. Discrimination in enforcement of CAA regulations.

3. Irregularities in conducting written examinations. . . . violations were not filed against applicants found cheating. . . . answers are alleged to have been changed (to) receive passing grade.

4. Lack of uniformity in enforcing CAA regulations, acceptance of gratuities. . . .

Main center of trouble in Region I was Pittsburgh where the "role" of airmen's and aircraftmen's offices was most pronounced. Complaints from that locality touched off Administrator Wright's own inquiry last February. Some of the pilot and aircraft certificates were awarded in spite of the following a personal visit

around several regions, the administrator laid his findings before Assistant Secretary for Air, William A. M. Barden, and Secretary Wilbur and asked that an investigation be conducted by the Commerce Department to assure impartiality.

Names Held—Moving himself to accept the report of the investigation, Wright acted upon receiving their recommendations. As those accused are being given 30 days in which to reply to the charges, CAA has not yet revealed their names.

It is indicated in some quarters that, spurred on by the CAA "Old Guard," the two men who have been asked to resign will carry their rebuttal up to the Civil Service Commission. It is explained that should the Commission stop

part them, it would precisely force Wright to resign. Official quarters discount this possibility and stress a belief in the correctness of Wright's action.

On the other hand, some persons highly critical of CAA are not convinced that the two men are fully in the wrong. They profess a feeling that perhaps the real roots of the trouble are in Washington and that actions in the field merely reflect that fact.

Absences—Last week, as the lid was tearing on top of the bubbling CAA kettle, T. B. Mailey was acting head of the safety regulation division in the absence from the country of Fred M. Lanter, assistant administrator within whose purview falls the general inspection service. Administrator Wright was on vacation. Assistant Secretary Barden was in South America, and his assistant, George Bergan, was on vacation.

Highlighting the general impression felt by many CAA people, that changes are on the way, was an off-hand remark last week of a CAA executive to the effect that "I went through one investigation and don't intend to spend two years in another. And I think other key men feel the same way."

Although the investigation of Region I brought into the open a situation known for some time in the industry, it has not as yet been followed by formal complaints from other regions. General inspection division reports it gets fewer complaints from time to time, but that the Pittsburgh case is the only one that has involved serious charges.

Other Regions — Contrarywise what were termed flagrant abuses of authority were being discussed within recent weeks in Region V, which embraces Wyoming, South Dakota, Nebraska, Iowa, Colorado, Kansas and Missouri. For a period, regional inspectors were refusing to approve any certificates in an entire state. In the end a conference attended by representatives from Washington, brought relief. But informed persons do not believe the incident is closed from the standpoint of the man-administration that indicated.

Surveillance is being attached to several of the seven posts announced by Wright as constituting a program to insure strict and impartial enforcement of CAA regulations. Particularly, observers are posted to the provisions that employees are prohibited from having any proprietary interest in



A Ship of War—With a Peacetime Destiny

You won't have to beat this weapon of war into a peacetime pleasanter. VJ Day will see the Fairchild-designed "Puck" ready to glow the surfaces of commerce.

Built specifically for military cargo—tons of guns, men and equipment for battle—the "Puck" is huge and will receive the bulky loads of peacetime commerce with ease, speed them hundreds or thousands of miles to their destinations.

Designed by the Army as the C-42, the "Puck" has been nicknamed the "Thing bomber." Its cargo compartment (2,850 cubic feet of unobstructed and continuous space) carries 93% of the capacity of a railroad boxcar.

Fairley in loading is a triumph of Fairchild design. Fifth doors at the rear of the fuselage open to the full width of the cargo space. Cargoes roll smoothly into the "Puck" from a truck, for the "Puck's" horizontal floor is at standard truck floor height. Smaller pieces can be loaded through a forward loading door.

The value of the "Puck" to shippers of all types of "big" cargo, will be as broad as the future of air cargo itself. Tests and experience will attest to its economy and multiplicity of uses. Thus, the "Puck," now at war, emphasizes the Fairchild tradition of advanced aviation, "the touch of tomorrow in the planes of today."

BUT U. S. WAR BONDS AND STAMPS

Fairchild Aircraft

Divisions of Fairchild Engine & Aircraft Corporation, Hempstead, Maryland

civil aviation, and that employees cannot accept gifts.

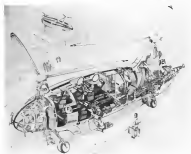
The practice of CAA personnel having private aviation interests has reached such an extent that there are records of inspectors buying surplus planes, having them repaired, certifying them, and then selling them.

► **Gifts Held**—It is being commented that the necessity of maintaining the ban against gifts implies that CAA employees in the past have been recipients of gratuities.

In this connection, it is also being recalled that at the last meeting of the CAA Non-Scheduled Flying Advisory Committee, bitter complaints were voiced by aircraft service operators at the necessity of early amortizing of CAA field men.

Al Lewis Joins ANLC

Al Lewis, formerly chief of the maintenance branch of War Production Board's aircraft division, has joined the Office of the Army-Navy Liquidation Commissioner as chief of the components and equipment section. ANLC has charge of disposal of all surplus aircraft and other surplus equipment. Lewis will be assisted by John Evans who was an industrial analyst at the aircraft division of WPB before joining the Commissioner. Lewis is the son of Dr. George Lewis of the National Advisory Committee for Aeronautics.



Tandem "Rotorbus" Proposal: Extensive preliminary research has led to this design by Gilbert Magill, Los Angeles, president of Rotor-Craft Corporation. He calls it the Rotabus. It is designed to carry 20 passengers and a crew of two for distances of from 10 to 300 miles.

Helicopter "Bus" Design Proposed

Rotor-Craft Corp. expects undependable craft to lift more than 40 percent of gross weight as useful load.

Ability to lift, as useful load, more than 40 percent of its 28,000 pounds gross weight is predicted for a 20-passenger Rotabus tandem helicopter design proposed by Rotor-Craft Corp. of Los Angeles.

Gilbert Magill, West Coast pioneer of tandem helicopter research and president of Rotor-Craft, believes that results of test flights of a small experimental tandem "bopper" his company now is building, under an Army contract, will establish the efficiency he feels is inherent in the Rotabus design.

(Limited performance and structural information released by the Navy to its experimental P-1V Engineering Force, Inc. 10-passenger tandem helicopter [AVIATION NEWS, July 22] indicated an approach to a useful load of 40 percent of the machine's gross weight.)

► **Design Meets**—While still in the design stage, the Rotabus has features which appear to warrant exploration with a full-size prototype.

Magill proposes a large airplane-type metal fuselage with a spa-

cious cabin for passengers. Two liquid-cooled engines centrally located beneath the cabin floor would supply power to a geared drive shaft linking and synchronizing rotors which will have 60-ft. diameter discs and an overlap of approximately one-half a blade length. He estimates that the lift loss of overlapping discs will be small and more than offset the weight saved in having a relatively short (65-ft.) fuselage.

His design shows an original pattern of air ducting to supply engines and the cabin, with virtually no sacrifice of the helicopter's overall streamlined exterior. Air is drawn in through a slot in the leading edge of the rear rotor support fin, and that delivered to the engines finally is exhausted through a turbine driven axial-type blower with a slight jet action.

► **Baggage Feature**—From the standpoint of the airline operator, the logical buyer of a Rotabus, the design is interesting in its offering of eight under-floor baggage compartments located through lower level doors. The landing gear is retractable. Doors opening from the passenger and crew compartments actuate spring-down steps. The design sketch shows the use of a crew of two, pilot and co-pilot.

Magill estimates that a helicopter such as his proposed Rotabus will have greatest utility for short-haul service over distances from 10 to 300 miles.—S. H.

Col. Murphy Assigned Surplus Planes in U. S.

Disposal of surplus aircraft within this country will be under the direction of Col. Frank J. Murphy as associate director, Office of Surplus Property, Reconstruction Finance Corp. Colonel Murphy, for the past three and a half years, has been chief of the production division of the mid-west district, Army Technical Service Command, at Wichita.

He once served as aide to the late Brig. Gen. Billy Mitchell and was in the air service during World War I. Before going on active duty in this war, Colonel Murphy directed sales for the Chrysler Corp.

► **CBH Head**—In the overseas disposal of surplus, Army-Navy Liquidation Commissioner has announced that Walter B. Schleizer becomes field commissioner for India, Burma, and China. Schleizer is on leave as vice-president and director of Muller and Phipps.

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For transport, for combat, Minibar aviation jacks speed service jobs. Hydraulic power + lock nut holding = a Malabar Hydro-Mechanical Jack. Malabar invites correspondence or discussion of your maintenance equipment.



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German Jet Bomber Plans Reveal Novel Wing, Engines

Power progress indicates adaptability of new propulsion configurations to long-range peacetime carriers; major airflow placed in swept-forward position on heavy JU-287 powered by combination of jet units.

Although distinctly related by designation series to the Ju-87 "Stuka" of the war's early years, the Ju-287 heavy jet-propelled bomber bears little resemblance to its ancestor predecessor.

The 287 is of unusual interest because of its peculiar swept-forward wings, and because it was the world's first heavy jet-propelled bomber to fly.

Wing Advantages—The advantages claimed for this 23-degree swept-forward wing are both constructional and aerodynamic. Constructionally, a large continuous bomb bay could be provided forward of the wing and relatively above the center of gravity. This also allowed for the retraction of the novel landing-gear into the fuselage just aft of the bomb bay.

The Ju-287 was ultimately to have been propelled by two large turbo-jet units, either the **Jumo 012** or the **BMW 003**. The 012 has an 11-stage axial-flow compressor and a 3-stage turbine with a designed thrust of 4,000/5,400-

lbs. and weighs 5,400-lbs. The 012 was projected only, not completed, but was to have a 12-stage axial compressor, annular combustion chamber with 34 burners, 3-stage turbine and adjustable propelling nozzle, a static sea-level thrust of more than 7,000-lbs. was hoped for.

As these units were not ready, three versions using four or six smaller units were tried, with the units mounted under the wings either singly or in groups, or one unit on each side of the nose and the remainder under the wings.

Various models were with:

- Four Jumo 004's totaling 3,000-lbs. thrust; maximum speed was 425/480-mph depending on altitude.
- Six BMW 003's totaling 10,360-lbs. thrust for 483/508-mph.
- Four Heinkel-Hirth 011's totaling 11,440-lbs. thrust for 495/517-mph.

Cruising speeds in all three cases were estimated at 39 percent less, with 90 percent thrust a very

feasible ratio. Speeds are far a mean weight of 34,460-lbs.; normal all-up weight of 47,340-lbs. would be somewhat slower, but still very much faster than the B-17 or B-24, and about the same bomb load, but slightly shorter range. Speed and performance generally was expected to be better with the projected versions using the new jet turbo-jets, the **Jumo 012** or **BMW 003**.

At his famous interview with Allied war experts, Gen. Air Chief Goering declared that failure to proceed with the very promising Messerschmitt 264 four-engine bomber was due to the antipathy of some people for White Messerschmitt.

This long-range bomber, capable of an operational flight with bombs from Germany to New York, was first flown in December, 1942, powered by four Jumo 211 liquid-cooled engines.

Speed Reservoirs—The more powerful Jumo 213's or the radial BMW 801's were ultimately intended for the 264, plus two supplementary BMW turbo-jet units, one under each wing, for bursts of high speed.

Goering added that a very powerful new bomber was expected to be ready by the summer of 1946 with a combination of jet and engine propulsion. These types were under consideration, a new Messerschmitt design, a Junkers and a Heinkel, the two latter being flying wing projects, a type in which Goering expressed great confidence for future developments.

Not much data is available on the projected flying wings. The Junkers model was still in the drawing board stage, but the figures are impressive:

- Span 78.8-ft.; aspect ratio 4.8; wing area 3,280 sq. ft.; gross weight 77,200/94,000-lbs.
- Designed speed 423-mph; designed range 3,700 miles. Stabilizing fins and rudders mounted on the trailing edge; wing of wood, fuselage of metal.

Power plant consists of four Heinkel-Hirth 04 turbo jet units giving 11,400-lbs. static thrust at sea level mounted in a row on top of the wing and extending over the trailing edge. It is believed that the quoted speed and range are on the optimistic side.

An even larger flying wing design is the Heinkel 13, with a wing span of 264 ft. Weight is similar to the Junkers model, but the power plant, consisting of four jet units of either the Jumo 004 or BMW



1936 Four Messerschmitts were actually built. It is said, it could be brought through opening, a new oil pressed like the bodies of a tank. No need to remove wing, as with a total fuel tank, thus simplifying maintenance.



1937 Early in 1937, conflict, Mess 264 bomber of the German Air Force received its first test flight. It is better than the Messerschmitt 264, plus two supplementary BMW turbo-jet units, one under each wing, for bursts of high speed.



1940 Army Air Force personnel are shown working on the Messerschmitt 264 bomber. The aircraft was built in a small, modern factory in Germany.



1942 "Jumo" 003's were used to power the Ju-287. The engine was built in a small, modern factory in Germany.



1945 A group of Messerschmitt 264 bombers were shown in flight. The aircraft was built in a small, modern factory in Germany.



1919 Muring, Muring cells can carry it. Raising, lowering, and moving, Muring cells are used to transport large objects. They are used to transport large objects.



It's the Best Any Liquid, powder to granular product, or any other material, can be loaded quickly, easily. Though, this is a Muring cell, any other, may also be used for storage.

How New Elastic Container May Cut Shipping Costs of liquids, powders, grains... anything that pours!

An entirely new type of container which promises substantial savings in the handling and shipping of liquid, powdered, granular or other free-flowing materials... is rapidly becoming one of the most talked-of postwar products yet to emerge from Martin Laboratories. These containers—known as Muring cells from the first syllables of the words "Martin Engineering"—are, basically, huge elastic "bags" designed originally as fuel tanks for aircraft, they have made valuable contributions to the Allied war effort (see pictures at left)—hold equally high promise as a means of transporting peacetime products.

Many Advantages

Here are some of the advantages offered by the Martin Muring cells:

1. To save a few minutes cells may be filled into ordinary railway cars, trucks or barges, thus cradling these vehicles to carry liquid or free-flowing dry materials.

2. On reaching destination and emptying of their contents, cells are folded up and shipped to sender. One boxcar will hold enough empty cells to load six boxcars when cells

are filled. This cuts speeding shipping costs, eliminates bulking of empty tank cars or truck trailers.

3. Cells cannot be bent or dented, will not rust or corrode, yield under impact (usual of burlap, airlifter and canvas) to handling.

4. If punctured, Muring cells may be quickly patched, thus avoiding soldering or other time-consuming repairs required to patch metal containers.

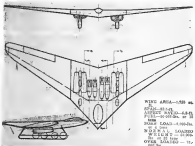
We Welcome Suggestions

Easy with wartime production of Martin Muring, Muring and other aircraft, the Glenn L. Martin Company has been able to explore fully the peacetime uses of the Muring cell. If you see possibilities for these elastic containers in your business or in other fields, we welcome your suggestions. Address, THE GLENN L. MARTIN CO., BALTIMORE 3, MARYLAND.

(The Glenn L. Martin Company is a subsidiary of the Martin Aircraft Corporation.)

Martin AIRCRAFT

Division of the Martin Aircraft Corporation



Next Jet "Wing" Bomber. One of the largest flying wing long-range bomber designs projected by German aeronautical engineers before VE Day, the Heinkel 13, sketched above, was to have been propelled by four jet units of either Jumo 004 or BMW 003 type. Static thrust delivered by the engines would have been about 8,000-lbs. at sea level.



German Ju-287: The modified Luftwaffe's largest plane, a Junkers 287, as it arrived at Air Technical Service Command's headquarters at Dayton to be studied by AAF experts. It was flown from Paris by a U. S. crew. While comparable in size to the B-29, the 287's range and cruising speed are less than those of the Superfortress. Designed as a transport, it was modified and equipped with radar for use as a long-range scout and "eye" of U-boats.



German Jet, Messerschmitt 262A-1, twin-jet German fighter, front view of which is shown, has been brought to Wright Field to be studied by the Air Technical Service Command. Arrived in four 30 min. courses in the nose. Wing span is 61 feet and length 35½ feet. Level flight speed of the ME 262A-1 is estimated at between 515 and 530 mph.

600, totaling 3,200 or 1,040 lbs. of 8½ static thrust, is not as powerful as the Juv 911's, hence it may be assumed the Ju-287 model would not have given as good per-

formance as the Ju-287. However, all of these projects are being studied with great enthusiasm in connection with our own post-war developments.

Jet-Turbo Problems

A complete engineering re-study of American turbo-jet engine development may develop, under military pressure, as the result of jet fighter crashes observed in the recent crash of Maj. Richard I. Bong in a Lockheed P-38 Shooting Star. Army grounding of all P-40's, except for several, which are being used for exploration of engine and accessory troubles, may be attributed to eight fire incidents which hitherto have not been solved.

Flash fires within the engine enclosure of the P-40 are believed to have led to more than one occasion of weakening of the under section of the fighter's rear fuselage section and distortion of the structure supporting the engine.

Under close Army and Navy supervision, with strict secrecy agreements avoided upon these

attending, West Coast engineers recently were given a frank picture of jet engine problems and performance data heretofore available only to top military personnel.

One such meeting was attended by Air Commodore F. K. Benson, director of engine development for Britain's Ministry of Aircraft Production.

While a formal disclosure has been made of the extent of his discussions with American engineers and Army and Navy officials, the British expert is understood to have suggested a revision of American jet engineering policies, and to have implied that many difficulties encountered in jet propulsion in this country may be traced to the use of stress barrier experts in the design and development of aircraft gas turbine engines.

106,000 L. A. Employees

The seven major airplane producers in Southern California last week reported a total payroll of 106,000 workers, following layoff of 25,000. The figure is expected to drop to considerably less than 100,000 within another fortnight.

At its production peak, the industry in the Los Angeles area employed 372,500, during June of 1943.

Current employment figures, by factory, are:

Consolidated Vultee, Van Nuys, 8,500; Consolidated Vultee, Van Nuys, 2,250; Douglas, 31,000; Lockheed, 35,000; North American, 12,000; Northrop, 4,500; Ryan, 4,500.

Three Air Firms Name New Officials

Roth becomes Aircooled Motors president; Hindrick elected Beech vice-president; Shad heads C & S day business.

Three major personnel changes in aviation manufacturing companies, announced last week, included:

Carl F. B. Roth, named president of Aircooled Motors Corp. He will also assume the responsibility of general manager, and succeeds Lewis H. Plesner, Jr., who resigned as president and director. C. F. Carr, secretary-treasurer of the corporation was elected a director to fill that vacancy.

Frank R. Hindrick, who has been coordinator and assistant general manager of Beech Aircraft Corp. since 1940, was elected a vice-president by the board of directors.

New southern region traffic manager of Chicago and Southern Air Lines, J. J. Shad who will have headquarters in Houston. All city traffic managers will be under his supervision. Early in 1940, Shad became a reservation agent and later became district traffic manager for Shreveport, Little Rock, and Memphis.

RFC Opens Bidding On 214 Plane Engines

Bids on 214 aircraft engines which have been declared surplus will be received by the Reconstruction Finance Corp. through Sept. 6.

ONE-MAN BOMBERS

Lockheed P-38 Lightnings—powered by Allison engines and originally designed as fighter planes—are now being used also as one-man bombers against the Japs. ★

When the two bombs—one on under each wing—are released, the Lightnings continue to combat as fighters—a dual advantage made possible by the engines' extremely light weight, less than one pound per horsepower,* which gives the plane exceptional lifting power as well as speed. ★ This extreme light weight—less the dream of engineers the world over—is a product of Allison precision and skill in handling metals—a precision and skill which will make any product ever bearing the Allison name.

POWERED BY ALLISON
P-38—Lightning
P-40—Mustang
P-51—Mustang
P-52—Mustang
P-53—Mustang

**Actual weight of Allison engine is 17½ lbs. per hp. Allison was first engine of less than one lb. per hp.*

LIQUID-COOLED AIRCRAFT ENGINES

Allison
DIVISION OF
GENERAL MOTORS

Every Bomber Afternoon—General Motors Sponsor of the AAF—NBC News

Text of CAB's Proposed Part 42— Non-Scheduled Carrier Regulations

CIVIL AERONAUTICS BOARD
WASHINGTON, D. C.

CIVIL AIR REGULATIONS DRAFT RELEASE NO. 58

SUBJECT: Suggest new Part 42 of the Civil Air Regulations—Non-scheduled air carrier certification and operation rules.

With this Draft Release the Civil Aeronautics Board is distributing copies of a proposed new Part 42 of the Civil Air Regulations in order that anyone interested may offer comment and express support or objection to particular provisions. The new Part would provide for the issuance of operating certificates and establish rules governing the operations of nonscheduled air carriers.

Safety rules governing nonscheduled air carriers engaged in interstate, foreign, and overseas operations have been under consideration by the staffs of the Administrator and the Board since 1946, but due to wartime conditions they have been held in abeyance until recently, pending the resumption of more normal civil aircraft operations. Within the past year the Board has held public hearings in order that proper determination could be made as to the need for economic and safety regulations for this type of operation. The Civil Aeronautics Act of 1938 requires that any person engaging in nonscheduled air carrier operations in interstate, foreign, and overseas commerce must hold an air carrier operating certificate. In view of the marked increase in commercial aviation operations it now appears appropriate to provide the rules for the issuance of such certificates and the rules for operating thereunder.

During the development of this proposed Part many recommendations for rules and operating procedures were received. A number of these proposals differ materially from those contained in the new Part. To obtain your comments and to focus attention upon certain points upon which comment is particularly desired, this Draft Release includes some of these recommendations as possible substitutions for particular provisions of the proposed Part.

As an aid in bringing comment into comparable and readily usable form, you are asked to identify your comment by specific reference to the numbered sections of the Part and to the internal sections of the Draft Release. Any additional comment which you wish to make concerning matters not covered or specific suggestions you may have about the proposed new Part will be welcomed.

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less all airports are equipped with parachutes.

(C) Shall pilot time flown in other than commercial operation be counted against the maximum allowable pilot hours specified in § 43.21?

(D) Shall the carrier be required to use pilots with the experience required by § 43.23, only when the flight is 500 miles or more from the operating base? (This would authorize commercial pilots with less experience to be used for flights of less than 500 miles.)

(E) Shall the carrier be required to use pilots who have had at least 50 hours of flight over water out of sight of land when engaging in overwater type of operation?

(F) Shall pilots operating aircraft more than 500 miles from the operating base be required to meet the first class physical standards prescribed in Part 29 within each 6-month period?

(G) Shall the carrier be required to have a second pilot on an aircraft when the first pilot is required to fly more than 4 hours during any consecutive 24-hour period? (H) Shall the carrier be limited to a particular operating area determined by the general character of the terrain adjacent to the base airport, the type of aircraft, and the navigational aids available?

(I) Shall the carrier be required to have its own ground radio communication facilities and to limit its operations within the area where these facilities are available?

After the receipt of the written comments and on a schedule to be announced, the Board will hold public meetings at the nearest invited facilities are desired, to discuss any important differences of opinion. Soon thereafter the regulations will be adopted in such form as they then appear appropriate.

Comments on the proposed Part are earnestly desired from all interested parties. Replies should be addressed to the Civil Aeronautics Board, Commerce, Building 3, Washington 25, D. C., and mailed so as to be received in Washington not later than October 1, 1946.

Fred A. Toombs, Secretary

PART 42—NONSCHEDULED AIR CARRIER CERTIFICATION AND OPERATION RULES (Proposed)

- | | |
|-------------------------------|---|
| 42.0 Certificate. | 43.1 Aircraft requirements. |
| 42.01 Issuance. | 43.10 General. |
| 42.02 Compliance. | 43.11 Daylight operations. |
| 42.03 Renewal of certificate. | 43.12 Nighttime operations. |
| 42.04 Inspection. | 43.13 Required instruments and equipment. |

THE Lifeline THEY COULDN'T CUT

TRAPPED BRITISH BURMA UNITS SAVED
FROM SURRENDER BY

Curtiss Commando Transports

The high tide of the Jap Burma invasion found many British ground forces surrounded by jungles and Japs. Roads blocked, bridges down... supplies exhausted, they were completely cut off.

There was one lifeline between them and the Japs could cut—Curtiss Commando Transports.

These world's largest, lowest trim-cruising carriers roared in low over isolated clearings, one-sided harpoon-shaped blades of food, medicine and ammunition to the beleaguered men below—kept them fighting when all other means failed—kept them alive to fight free of the enemy.

All over the world, all through the war, Curtiss Commandos have flown under every condition, delivered anything needed anywhere in the cause of victory.

Once that full victory is attained, still, these famed air carriers make equally creditable contributions to peacetime commerce. Their speed, dependability and economy will carry them from task in the fields of air travel and air trade.

**CURTISS
AIRPLANES**
DIVISION OF
CURTISS-WAIGHT
INC. • ST. LOUIS, MO.

The *PX*er by LEAR, Incorporated



A New Low-Cost Transmitter-Receiver for the Private Flyer

As soon as the doors close down, private flyers will have available a new high-efficiency radio such as they've never seen before—the Lear Flyer.

All of Lear's experience with aircraft radio since 1930, plus the great advances made during the war, are reflected in this new, compact, lightweight radio instrument.

It is far-reaching, easily installed, dependable, and low in cost.

There is transmitter-receiver flying home always mounted. Perhaps you would like to be distributor for it and/or Lear Radio. Some valuable territories are open to qualified representatives.

If you are interested, get in touch with us. Write LFR, Incorporated, Aircraft Sales Department, 115 East N. W., Grand Rapids 2, Michigan—Phone 6-9651, Ext. 32.

LEAR RADIO



- 42.14 Maintenance.
- 42.17 Instrument approach and landing rules.
- 42.20 First pilot rules.
- 42.23 Flight time limitations for pilots.
- 42.25 Certification and experience.
- 42.26 Recent flight experience.
- 42.28 Logging flight time.
- 42.3 Flight operation rules.
- 42.36 Manual.
- 42.31 Flight plans.
- 42.32 Instrument and equipment serviceability.
- 42.33 Fuel supply.
- 42.34 Weather minimums.
- 42.35 Flight altitude rules.

- 42.36 Being conditions.
- 42.37 Instrument approach and landing rules.
- 42.38 Maintenance rules.
- 42.40 Pilots at controls.
- 42.41 Admission to pilot compartment.
- 42.42 Airframe.
- 42.43 Manual.
- 42.44 Emergency flights.
- 42.45 Reports.
- 42.46 Deviations.

The following regulations are prescribed for noncheduled air carrier operations in takeoffs, enroute, or foreign air transportation.

42.0 CERTIFICATE

- 42.00 Issuance. An air carrier operating certificate providing the type of noncheduled operation and such operating specifications and limitations as may be reasonably required in the interest of safety will be issued by the Administrator to a properly qualified applicant who demonstrates that he is capable of conducting the proposed operation in accordance with the applicable requirements hereafter specified. Application for a certificate or application for amendment thereof shall be made upon a form prescribed and furnished by the Administrator.
- 42.01 Compliance. All operations must be conducted in accordance with the specifications of the air carrier operating certificate and the

- rules contained in this Part.
- 42.02 Duration. An air carrier operating certificate will continue in effect until canceled, suspended, revoked, or a termination date is set by the Board, after which it shall be surrendered to the Administrator upon request.
- 42.03 Duplication. The air carrier operating certificate must be available at the principal operations office for inspection by an authorized representative of the Administrator at Board.
- 42.04 Inspection. An authorized representative of the Administrator shall be permitted at any time and place to make inspections or examinations to determine the operator's compliance with the Civil Air Regulations.

42.1 AIRCRAFT REQUIREMENTS

42.10 General.

- (a) Aircraft operated in accordance with the airworthiness requirements of the Civil Air Regulations.
- (b) Multiengine aircraft shall be:
 - (1) equipped so that engine operation may be promptly stopped in flight.
 - (2) capable, with any one engine inoperative, of maintaining 300 feet per minute climb at 1,800 feet above sea level.
 - (3) Single engine land aircraft, except for takeoff and landing, shall not be operated over water beyond safe power-off gliding distances from shore.
 - (4) Single engine sea aircraft, except for take-off and landing, shall not be operated over land beyond safe power-off gliding distances from open water.
 - (5) Single engine aircraft shall not be operated at night or under instrument flight rules, except under conditions specified in the air carrier operating certificate.

- (6) After December 31, 1967, single engine aircraft shall not be flown at night or under instrument flight rules.

42.11 Oxygen apparatus.

- (a) Aircraft operated at an altitude exceeding 10,000 feet above sea level continuously for more than 30 minutes or at an altitude exceeding 12,000 feet above sea level for any length of time shall be equipped with effective oxygen apparatus and an adequate supply of oxygen available for the use of the operating crew. Such aircraft shall also be equipped with an adequate separate supply of oxygen available for the use of passengers when operated at an altitude exceeding 12,000 feet above sea level.

42.12 Emergency equipment.

- (a) Aircraft flown land distances over uncharted terrain must carry such additional emergency equipment as the Administrator deems for the particular operation involved. All aircraft operated over water shall be equipped with life preserver or flotation devices readily available for each person aboard and with a Very pistol or equivalent signal apparatus, except that this equipment will not apply when such operations consist only of landings, take-offs, or flights of short duration over water where the Administrator finds that such equipment is not necessary in

addition, all aircraft operated for long distances over water shall be equipped with a sufficient number of life rafts to accommodate adequately all occupants, and such additional emergency equipment as may be required by the Administrator.

42.13 Required instruments and equipment.

The following instruments and equipment for the type of operation specified shall be installed.

- (a) CTR (day)
 - (1) instruments and equipment specified in § 43.38 (a),
 - (2) one fan ventilator and on multielectric aircraft, a fire warning system to serve each engine compartment,
 - (3) one or more storage batteries or other source of electrical supply, sufficient to operate all radio and electrical equipment necessary for the flight,
 - (4) two-way radio communication system and (auxiliary) equipment appropriate to the ground facilities to be used,
 - (5) 3 spare fuses for each capacity used in the aircraft, or 25 percent of the number of each capacity, whichever is greater,
 - (6) first-aid kit adequate for the type of operation involved.
- (b) CTR (night)
 - (1) instruments and equipment specified in § 42.12 (a) and 42.13 (b),
 - (2) 1 set of instrument lights,
 - (3) an electrically heated pilot's tube serving each pilot's airspeed indicator,
 - (4) one sensitive type altimeter,
 - (5) one gyro rate-of-turn indicator mounted with bank indicator,
 - (6) one gyro direction indicator,
 - (7) one outside air temperature gauge with indicating dial in pilot compartment,
 - (8) one auxiliary temperature gauge or equivalent approved device,
 - (9) one clock with sweep-second hand,
 - (10) if vacuum system is used, one vacuum gauge with warning indicator on the instrument panel installed in line leading to the rate-of-turn and gyro direction indicator.
- (c) IFR
 - (1) instruments and equipment specified in §§ 42.12(c) and 42.13(c),
 - (2) 1 additional radio receiver with direction finder,
 - (3) 1 additional sensitive type altimeter.

42.14 Maintenance.

The air carrier shall provide maintenance facilities, personnel, and inspection system adequate to maintain all aircraft in airworthiness condition, repair, alterations, and overhauls shall be performed in accordance

with Part 18. The air carrier may contract for maintenance with an

appropriately rated certificated repair agency.

42.2 PILOT REQUIREMENTS

42.20 First pilot rules.

(a) **Pilot in command.** The first pilot at the command of the aircraft at all times during flight and is responsible for the safety of persons and goods carried and for the conduct and safety of members of the crew.

(b) **Control seat.** Immediately prior to take-off the pilot shall test the flight controls to the full limit of travel, check engine instruments and to ensure the availability of the flight instruments.

(c) **Pre-flight action.** Prior to commencing a flight the first pilot shall familiarize himself with the information necessary for the safe operation of the aircraft on the airports to be used and on route.

(d) Emergency devices.

(1) The first pilot is authorized to follow any course of action which appears necessary in emergency situations which, in the interest of safety, require immediate decision and action. He may, in such circumstances, deviate from prescribed methods, procedures, or movements to the extent required by considerations of safety. When such emergency authority is exercised the pilot shall keep the proper control station fully advised regarding the progress of the flight.

(2) In an emergency requiring either the dumping of fuel or a landing at a weight in excess of the authorized landing weight, the first pilot may elect to follow whichever procedure he considers safer.

(e) **Flight equipment.** Before any flight is entered the first pilot shall have readily available:

(1) current flight and navigational flight maps for the area which the flight is to be conducted;

(2) instrument approach procedures for airports which are to be used when the flight under instrument flight rules is authorized;

(3) the latest weather reports and forecasts made by the U.S. Weather Bureau or by a source approved by that Bureau when available for the area to be flown.

42.21 Flight time limitations for pilots.

A pilot must not pilot aircraft in excess of:

(a) in air transportation:— 36 hours in any 7-day period; 85 hours in any one month; 1,000 hours in any one year; or

(b) total commercial flying time:— 1,000 hours in any one month; 1,200 hours in any one year.

If more than 24 hours are flown in any 24-hour period, a complete rest from flying for 16 hours must be taken.

42.22 Certification and experience.

(a) **First pilot.** Any pilot serving as first pilot must hold a valid commercial pilot rating with an aircraft type and airplane class rating for the aircraft in which he is to serve, and for:

(1) **CPR (day) flight.** he must have had at least 50 hours of cross-country flight time as pilot or copilot;

(2) **Night and IFR flight.** he must possess a currently effective instrument rating and have had a total of at least 500 hours of flight time as pilot or copilot including 100 hours of cross-country flight of which 80 hours shall have been during the hours of darkness and 50 hours of actual instrument flight.

(c) **Second pilot.** Any pilot serving as second pilot in an aircraft requiring more than one pilot must hold:

(1) for CPR (day) flights, a valid commercial pilot rating with the appropriate type and class ratings;

(2) for night and IFR flights, in addition to (1), a currently effective instrument rating.

42.23 Recent flight experience.

(a) **General.** No pilot shall serve as first pilot in an aircraft under instrument rules within the preceding 90 days he has made at least 3 take-offs and landings to a full stop in the same model of aircraft and he shall not serve during the hours of darkness unless he has made at least 3 take-offs and landings to a full stop during each period within the preceding 90 days.

(b) **Instrument flight.** A pilot shall not pilot an aircraft under instrument flight rules unless he has had at least 6 hours of instrument flight under actual or simulated flight conditions during the preceding 6 months or until he has re-qualified.

42.24 Logging flight time.

(a) A first pilot may log the total flight time elapsing during his conduct of the aircraft.

(b) A second pilot may log the total time during which he serves as second pilot.

(c) Additional pilots when required, and serving as such, may log 50 percent of the total flight time.

(d) **Logging instrument flight time.** Instrument flight time may be logged as such by the pilot actually manipulating the controls only when the aircraft is flown solely by reference to instruments either under actual or properly simulated flight conditions.

42.3 FLIGHT OPERATION RULES

42.30 Manifest.

A manifest form for each flight, except for local sight-seeing flights in the vicinity of the airport, shall be signed by the pilot if the air carrier does not have other authorized personnel charged with the duty of loading the aircraft. This form shall show the distribution in the aircraft of the total payload loaded. The pilot shall retain the original manifest only and a copy shall be kept available for inspection for at least 90 days at the principal operations office.

(b) **Flight plan.** A flight plan for each flight, conforming at least to the information required by § 60.250, shall be filed at the principal operations office. The flight plan is in addition to the flight required for IFR flight in control areas and shall show the appropriate control sector or sectors.

42.31 Instruments and equipment serviceability.

Prior to starting any flight, all instruments and equipment must be in operative condition. If any instrument or equipment becomes inoperative in flight it shall be repaired or replaced at the first airport where repairs or replacements are readily available or the flight may continue to its destination if the pilot determines that with the remaining serviceable instruments and equipment the flight can be continued with safety.

42.32 Fuel supply.

(a) **Flight under contact flight rules (CPR).** A flight shall not be started unless the aircraft carries sufficient fuel, considering the wind and other weather conditions expected, to fly to the next point of intended landing and to reserve fuel for a period of at least 45 minutes at normal cruising consumption.

(b) **Flight under instrument flight rules (IFR).** Sufficient fuel and oil, considering the wind and other weather conditions forecast, shall be carried:

(1) to complete the flight to the point of first intended landing, and thereafter;

(2) to fly to the alternate airport, and thereafter;

(3) to fly at normal cruising consumption for a period of 45 minutes.

(c) **Weather minimums.** No flight may be started unless the current weather reports and forecasts show a trend indicating that the ceilings and visibility at the airport of intended landing are, and will remain, at or above the minimum specified below:

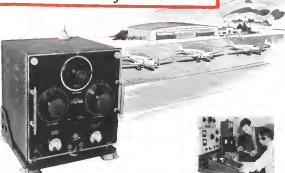
(a) **Contact flight operations (CPR).**

(1) ceiling—3,000 feet;

(2) visibility—3 miles.

(b) **Instrument flight operations (IFR).**

Radio Out of a Hat!



88 DAYS FROM DRAFTING BOARD TO FLIGHT LINE

Germany inspired the world in '39 with their *Alteberg*. At exactly the same time another *Alteberg* was quietly being made by the Canadians in this country. They needed airplanes and radio communication equipment—fast.

The airplanes they got...and the radios! There were less than 90 days left when Pacific Division got the go-ahead for transmitter and microphone equipment that had not even been designed.

In 88 days Pacific Division designed...developed...and delivered a quantity of 100-watt motor oscillator transmitters for low and high frequency...amplifiers for the microphone...and engineered and installed them and all other radio equipment in the Canadian airplanes.

We at Pacific Division would rather not accept any more orders that we have so full out of a hat. But we are open for business, especially VHF Communication Systems in which we specialize, that demands experience, ability and resourcefulness. Your inquiries are invited.

© 1955, Radio Aviation Inc.



OPERATING SIX VHF EXPERIMENTAL STATIONS

- (1) ceiling—500 feet,
(2) visibility—1 mile,
(3) alternate airport, ceiling—1,500 feet; visibility—3 miles.

42.35 Flight altitude rules.
(a) **Day (CFR) operation.** Except during take-off and landing, aircraft shall not be flown less than 500 feet from any obstacle in flight, except in such cases as may be specified by the Administrator.

(b) **Night (CFR) or instrument (CFR) operation.** Except during take-off and landing, no aircraft shall be flown at an altitude of less than 1,000 feet above the highest obstacle located within 5 miles either

side of the course intended to be flown.

42.36 icing conditions. Aircraft must not be routed or flown into known heavy icing conditions and may be flown into light or medium icing conditions only if the aircraft is equipped for deicing wings and propellers and such other parts of the aircraft as may be essential to safety.

42.37 Instrument approach and landing rules. Unless otherwise instructed by a control tower or center, standard instrument approach procedures for the airport shall be used.

42.4 MISCELLANEOUS RULES

42.46 Pilots at controls. In the case of aircraft requiring two or more pilots, two pilots must remain at the controls at all times while landing and taking off, and while the aircraft is en route, except when the absence of one is necessary in connection with his regular duty or when he is replaced by a person authorized under the provisions of § 42.45.

42.47 Admission to pilot compartment. In aircraft having a separate pilot compartment, no person, other than a crew member, a check pilot, or inspector of the Administrator in performance of official duty, or a person whose admission is approved by the first pilot, may be admitted to the pilot compartment. In the latter case, the first pilot must remain at the controls.

42.48 Airports. Airports or landing areas used for flight or scheduled service so that the taking off or landing run of the aircraft will not require the use of more than 50 percent of the effective length of the area available for taking off or landing. The effective length of the area shall be determined by making allowance for obstructions to the flight path with a 3 to 1 slide in CFI operations and a 4 to 1 slide in IFR operations.

42.49 Manual.

(a) When required by the Administrator, the air carrier shall prepare and maintain a manual for the use and guidance of operators and maintenance personnel which contains full information necessary to guide flight and ground personnel in the conduct of flight operations and to inform such personnel regarding their duties and responsibilities. It must be in a form approved by the Administrator and forwarded to all persons concerned by the Administrator or Board. All changes must be kept up to date.

(b) A pilot's check-off list shall be furnished for and maintained in the pilot compartment of the aircraft.

(c) Any changes required by

the Administrator shall be promptly incorporated in the manual. Other changes not inconsistent with any Federal regulation, the air carrier operating certificate, or safe operating practices may be made without the prior approval of the Administrator.

42.49 Emergency Rights. In the case of emergencies accumulating

the transportation of persons or medical supplies, the rules contained herein regarding type of aircraft, equipment, and weather information to be observed will not be applicable. Provided, That within 48 hours after the pilot returns to his base he shall file a report to the Administrator setting forth the conditions under which the flight was made, the necessity therefor, and giving the names and addresses of crew and passengers.

42.45 Reports.

(a) Each carrier shall keep the following current reports with respect to all aircraft, aircraft engines, propellers and, where practicable, appliances used in air transportation:

- (1) Total time and service.
- (2) Time since last overhaul.
- (3) Time since last inspection, and

(4) such other data as the Administrator may deem necessary for safe operation.

(b) An annual operations report must be submitted on the form approved by the Administrator for this purpose not later than the 30th day of January of each year.

42.9 DEFINITIONS

(a) **Air carrier** means any enterprise of the United States who undertakes, whether directly or indirectly, by a lease, or by any other arrangement, to engage in air transportation.

(b) **Air station, overseas, and foreign air transportation** means the carriage by aircraft of persons or property as a common carrier for compensation or hire or the carriage of mail by aircraft in commerce between the following: a place in any State of the United States or the District of Columbia and a place in any other State of the

United States or the District of Columbia; places in the same State of the United States through the airspace over any place outside thereof; a place in any State of the United States or the District of Columbia and any place in a Territory or possession of the United States; a place in a Territory or possession of the United States and a place in any other Territory or possession of the United States; or a place in the United States and any place outside thereof; whether such carriage is made wholly by aircraft or partly by aircraft and partly by other forms of transportation.

with those of his New York organization. Walker was for two years a vice-president of Transcontinental and Western Air, Inc., and assistant to the president of United Air Lines and in charge of a future public relations.

• Milton C. M. McKelvey has joined Foster and Davis, Inc., advertising agency in Cleveland to write a new General Electric national lighting campaign in trade magazines and "EC" newspapers in 130 cities. Work on the General Electric national lighting

campaign will include airport and aircraft lighting.

carpentry will include airport and aircraft lighting.

12 seconds of the most valuable time "on earth"!

Jet assisted take-off, born of war, will be commercial flying's greatest single aid when final peace comes. Directly adaptable to any type of airplane... capable of flying maximum payloads out of nearly any field at any altitude...

... Jet Assistance is the solution to the airline's problem of getting profit payloads off the ground. The 12 seconds average thrust duration of

AeroJet Assistance is worth much to the operator who looks to extra profits.

AeroJet Engineering Corporation has made many thousands of jet assistance units (Jatus) for the Army and Navy. Its research and develop-

ment facilities are unequalled. AeroJet invites inquiries from any organization interested in learning more about this new science. An informative booklet—"Report from AeroJet"—has been prepared. Write for it today.



Send today for your FREE copy of "Report from AeroJet"—a detailed story of standards and methods in response to demand.

AeroJet Engineering Corp.
224 West Columbia Blvd.
Pawnee, Oklahoma

AeroJet Engineering Corporation • A Division of THE GENERAL TIRE & RUBBER CO.

AeroJet

PERSONNEL

R. E. Montgomery To Aid TWA Board Chairman

Robert E. Montgomery (photo), formerly district traffic manager for



chief of priorities and traffic for the European division of the Air Transport Command, and was awarded the Legion of Merit for his work. Returning to this country with the rank of lieutenant colonel, Montgomery was assigned to the Ferrying Division of AEC at Cincinnati where he has been on duty as assistant chief of priorities and traffic for the domestic division until his release from active duty August 1.

Division of Evans Products Co., where he will direct the sale of cargo plane equipment. Prior to his employment with Evans, a year ago, he was with the Service Department of Ford Motor Co.

Frank E. Lowman has been named city manager for Eastern Air Lines in Charleston, and will make his headquarters in the company's new downtown ticket office in the Francis Marion Hotel building.

John Krouger is new traffic representative for Mid-Continent Airlines in Minneapolis.

Russell H. Whempner has been appointed sales manager of the aeronautical division of the Minneapolis-Honeywell Regulator Co. Whempner joined Minneapolis-Honeywell in 1995 and spent his first five years with the company at the home office "Mediated" division.

Miss Mildred "Tommie" Heck replaces Peggy Kellerman as child hostess for Continental Joe Lunch.

Fred W. Parker (photo) has joined the public relations staff of Pennsylvania-Central Airlines as assistant to Ray Bell, director.



Service. Parker has been on the staffs of the United Press, the Louisville Times, Associated Press Photo Service, and the Post-Keeper Evening Star.

J. A. Thomas has been appointed executive assistant to **John A. Collins**, transportation vice-president of Transcontinental and Western Air, Inc. Thomas has been transportation manager of the Midwest region since November. Prior to that he was serving as a lieutenant commander in the Navy.

Bradley M. Steele, manager of Lockheed Air Terminal, has resigned to enter a private manufacturing business. He is replaced by Robert V. Barnes, assistant manager and auditor at the Burbank Airport.

Richard E. Nash has been granted a leave of absence from AE American Aviation, Inc., to assist the department of Commerce in research preliminary to the publication of booklets on the post-war outlook for employment and business opportunity in aviation. Nash is economic consultant for AE American.



MR. ENGINEER: Here's a combination that will stop a truck

The unit is a Bendix "Hydrovac". A one-unit vacuum power braking system, it is used on trucks, tractors or buses equipped with hydraulically actuated brakes. It is a tandem piston power master cylinder for transmitting hydraulic pressure to the brake cylinders. Because it eliminates the need for external levers or linkage, it must be absolutely dependable under all operating conditions. And, that is where those Birco leather packings come in.

sirvis

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Aeronautical Board To Replace APB, Two Administrative Units

Little known but powerful unit slated to assume top role in design and production as head of cooperative planning between Army and Navy aviation.

The little known but highly powerful Aeronautical Board now moves into the picture of aircraft design and production as the top instrument of cooperative action between Army and Navy air activities.

It is to replace the Aircraft Production Board and its two administrative arms—the Aircraft Resources Control Office, and the Aircraft Scheduling Unit.

Approved—Such recommendations now are being considered within the government and there is every likelihood that they will be acted upon affirmatively.

The Aeronautical Board has existed throughout the war, and prior to hostilities, but practically all of its functions and policy-making powers were vested by APB. It is an agency appointed by and directly responsible to the President. Its members are composed of high-ranking Army and Navy officers.

Its functions have been and will be, according to current plans conceived with top level determination of joint specifications for aircraft produced by the Army and Navy, and other policy-making decisions for the joint aircraft program.

Work Done—Dissolution of APB, ARCO, and ASU is based on the fact that these agencies have completed the work which was laid out for them late in November, 1942, by the Army, Navy, and WPB. At that time it was agreed to give APB complete jurisdiction over the production effort of the services and industry. On December 8, 1942, a general administrative order was issued officially establishing APB and it was assigned the job of inspiring into any feature of the aircraft production program, the scheduling of planes and components, and its study and take action in any field affecting the realization of aircraft production schedules.

ARCO was established to coordinate and publish aircraft schedules, to determine requirements to meet the program in terms of manpower, materials and facilities. ARCO thus acted as the aircraft program under the Controlled Materials Plan.

ARCO directed activities of ASU which was located at Wright Field, Dayton, O. It also gathered information from contractors and published them and coordinated standardization and conservation measures.

Good Record—Through this agency the AAP and Naval Aviation achieved a remarkable and effective degree of coordination and cooperation. ARCO became a powerful agency in Washington and, manned by aggressive and competent officers, it usually got a lion's share of the materials and resources "pie" throughout the

war. It was the champion of the aircraft industry in every determination of policy in any of the war agencies. It took the responsibility for seeing that aircraft plants were properly manned.

ARCO officers say frankly that one of the secrets of the agency's success was that its organization was so complex and unusual that few persons really understood it and therefore hesitated to contest its claims. The general activities of ARCO were tied in with related activities of WPB and the APB. ARCO representatives maintained liaison with WPB industry divisions, usually having offices in those divisions.

The main function of the ASU was to provide a sole Government contact with the aircraft industry in determining its requirements and allocating materials and facilities for the joint air program.

Cutbacks—Now with the joint aircraft program shifted from an August production schedule of almost 3,000 planes to a few hundred craft, the need for this complex organization evaporated overnight. When the aircraft production program started to accelerate several months ago, the abolition of APB, ARCO and ASU was considered but a determination was made then to continue it throughout 1945 and open the matter up for review again in December. Final victory is ensuring a much earlier liquidation.

Current members of the Aero-



STILL IN PRODUCTION:

Assembly line of P-40 Shooting Stars which, despite sweeping Air Force cancellations following Japan's surrender, will continue to be manufactured by Lockheed.

The FRIENDLINESS of Flight

International flight fosters international friendships. As air service expands there will develop close relationships, and better understanding among people and nations.

Coordinated air service, such as planned by Braniff Airways between the Americas, will weld together in good will the people of the Western Hemisphere. Increased trade with all its benefits will surely follow.

BRANIFF AIRWAYS



Jets Emphasized By Westinghouse

Westinghouse officials are making ambitious plans to enter and remain in the aviation powerplant business. It does not regard its work with gas turbines and jet engines as mere experimental activities carried on at a side line.

Last February, Westinghouse established its Aviation Turbine Division. The services, who so far have been the only customers for jets, have spoken well of the division's progress in development and production. Westinghouse models include the S-5A, J5B, and the J4C turbo jet engines.

Lead Field—So far, the manufacturers of the currently-popular reciprocating engines have shown less enthusiasm for jets and have done little in development and production. Because of this, Westinghouse officials feel confident that they are well ahead of the field.

Industry is awaiting eagerly the complete report of the study conducted by U.S. military, naval and industrial technical missions to Germany. All previous indications from these missions are that German research was from two to three years ahead of American science on jet development. Reports and

fragmentary data on German jet and gas turbine research is giving a big boost to this type of development in this country. Some of these returning experts are convinced that the days of conventional reciprocating aircraft engines in this country can be numbered in a very few years.

Airadio To Build Midget Combination

Airadio, Inc., a leading wartime producer of radar and electronic test equipment for the Navy, has released details of one of its bids for portable business—a compact transmitter-receiver, weighing only 10 pounds, 35 ounces, for private aircraft.

Ready for production at the Stamford, Conn. plant, the Airadio unit provides plane-to-ground communication, radio range, weather and standard broadcast reception, and also serves as an interphone link between pilot and passenger.

Card Size—The extreme compactness of the set requires, says the manufacturer, only a space as large as a postcard for mounting the receiver on the instrument panel. The transmitter, not having to be accessible in flight, can be installed elsewhere in the aircraft.



Midget Radio: The lightweight, compact transmitter-receiver for private aircraft, soon to be made by Airadio, Inc. Among other characteristics, it has a built-in radio range filter in the receiver. When weather or other information is coming in from a radio range station, the range signal can be eliminated by flicking one of the toggle switches on the panel.

Patent List

With the cessation of war work, manufacturers seeking new products for the civilian market may be assisted by a recently-instituted register of patents established by the Patent Office.

To date, about 300 patents available for sale or licensing are listed in the register. Although the Patent Office has not kept a direct tally of the results, it states that negotiations are in progress for several of the patents listed, and that at least one arrangement has been completed. Majority of the patents included in the register have been filed by small manufacturers or inventors.

McDonnell Leases Surplus Air Plant

In one of the first arrangements of its kind in the surplus plant disposal program, the McDonnell Aircraft Corp., St. Louis, Mo., is acquiring part of the space vacated by another aircraft manufacturer, Curtiss-Wright, in the huge building at Lambert-St. Louis field. McDonnell is leasing the facilities, with a main building containing 1,200,000 square feet, from the Reconstruction Finance Corporation on terms which have not yet been disclosed. Although negotiations for the plant began before the Japanese surrender, McDonnell decided upon the move on the basis of post-war earnings.

Job Rise—Initially, the company will need but 100,000 square feet of the plant. Later, however, plans call for an increase in employment from 3,000 to 5,000 and the utilization of the entire facility. Peak employment will be reached by January 1, and is expected to extend well into 1946.

James S. McDonnell, president, and his company would continue working on Navy development contracts and would thus require the space being leased from the RFC. Other plant embrace commercial helicopters.

Since its organization in 1939, McDonnell has turned out \$55,000,000 of war work. The move into the new plant will see its operations consolidated for the first time, the company previously having occupied 15 separate buildings scattered throughout the St. Louis area.



PATTERN FOR TOMORROW'S AIRLINES. Along with good planes and pilots, the new regional and local airlines starting in business will need the best and most complete instrument equipment they can buy. Instruments are the backbone of safe operation... the kind of operation our pioneer airlines have taught the nation to expect in scheduled air transportation. Instruments also have everything to do with regularity of service, and this regularity of service means the clock, around the calendar—mean not only service to the public but the added and most economical use of the new air carrier's investment in equipment. Tomorrow's airlines will find Kollsman accuracy and dependability important aids to the safety, regularity and economy of these operations.

KOLLSMAN AIRCRAFT INSTRUMENTS

PRODUCT OF

SQUARE D COMPANY

BRIDGEVIEW, NEW YORK STAMFORD, CONNECTICUT

More Than 5,000 Lightplanes Promised Before Year's End

AVIATION NEWS poll of leading pre-war private plane manufacturers reveals production lines undergoing immediate shift to full commercial output; materials, labor available; merchandising plans expand, progress.

Well over 5,000 new personal aircraft are promised by manufacturers before the end of the year.

In the first full week of peace, lightplane companies last week for the most part busily shifted gears and started production lines moving again, this time on civilian output.

Plants Cleared—An AVIATION NEWS poll of leading pre-war personal aircraft manufacturers shows most military orders have been cancelled. Plants are sufficiently cleared for civilian production. A ample labor and materials are available, and the distribution and merchandising set-up is progressing satisfactorily.

In prospect are: a widespread distributor and dealer organization, almost universal agreement on concentration on sales and service—company reports 300 authorized service centers already signed up, flight instructions will be given free with the purchase of a plane—this being a cardinal plank of all major companies' sales efforts.

One remaining problem, still clouded, is prices. Few manufacturers are deliberate on this point. The labor situation is changing

rapidly and so is the supply of materials.

Republic still sticks to a figure of "about \$8,000" for its Seabee amphibians. Stinson lists the Voyager 125 at \$3,995. Other companies are not certain.

Here are the approximate amounts of some private aircraft expected to be produced before the end of the year:

Aerocraft—550
Taylorcraft—600
Stinson—2,560 for 1945, 1946.
Piper—1,500
Luscombe—1,000

Few Seabees will come out this year. Company experts to hit its stride next Spring and has 3,900 orders.

Manning in the list is Fairchild. "Our company is not re-entering the private aircraft field at this time," states James A. Wales, Jr., assistant to the general manager. Fairchild still has contracts for its Packet cargo plane and will require all labor and materials for that "for some time to come."

Details were refused of the outlook at Engineering and Research Corp., makers of the Airscope. It is believed, however, that a far-flung distributor organization has been formed and that the company has resumed production of the spin-proof plane.

Culver—Culver Aircraft Corp. is still heavily committed on government work, with only one-third of its war contracts cancelled. Although these will not be completed until June, 1946, the company will be able to devote some space and personnel to the production of its personal plane, claimed as the only entirely new aircraft to be offered for the immediate future.

While still withholding full details of the Culver model, the company does concede it will have an electrically-operated, retracting, tricycle landing gear, 60-hp Con-



Recent Lightplane Orders: Typifying the soaring plans, ambitious and prospects of lightplane manufacturers is this picture of the signing of what is believed to be the largest check for a single order of lightplanes (AVIATION NEWS, August 18). The check for \$1,000,000. The signer, Howard Brown, general manager, Western States Aviation Co. The planned recipient, James C. Welch, sales director of Stinson, whose Voyager 125 is the subject of the deal.

tinental water-injection engine, be soundproofed and have a simplified control system.

The first plane is expected to be flown within a few weeks, but the first production models will not be ready until next February.

"Private" Built—Two companies, Luscombe and Republic, still have government contracts. The former, however, is shifting all such work to its Trenton plant, leaving the new Dallas facility completely free for civilian work. The first of the revised Stingers, SE, was completed on August 12 and is now being test flown. Meanwhile, work is continuing on the production line.

Republic's situation is complicated by a continuance of government experimental and development work at its Farmingdale plant. But, the plant is rapidly being reconverted to handle both the military work and civilian production.

The last of this month will see the beginning of Republic's re-arming, which calls for a boost of between 4,000 and 5,000 workers.

"Clear Road"—Two of the other manufacturers, Piper and Aerocraft, report plants only partially cleared, but work is proceeding and resumption of civilian output should not be hampered.

Stinson's Wayne plant is not



ANY SMOKESTACKS TO PAINT?

The tricky job of painting high smokestacks is one of many suggested to us for helicopters to handle. All that would be needed is a hose and nozzle leading from a paint tank inside the fuselage, operating while the aircraft leisurely circles the stack from top to bottom.

An apple-grower writes us, outlining the possible advantages of helicopters to dust his orchards.

A South American government would like a fleet of helicopters, in order to annihilate war sprays the growth of locusts which now destroy valuable crops.

Ranchmen want helicopters for such work as taking cattle counts on their vast ranges—dropping salt for their grazing stock—delivering feed grub to distant round-up crews in rough country.

Hundreds of business executives have written to us here at Kellett Aircraft, so point out ways in which they think postwar helicopters might be useful.ques-

tion of weight, range, cost and mechanical reliability make some of those ideas impossible to execute at the present stage of helicopter progress.

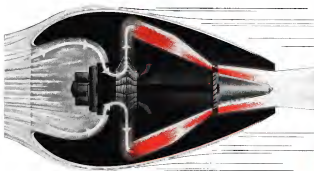
However, the number and diversity of these proposals suggests us with the far-out possibilities of an aircraft which can hover or take off from, and land vertically in, any area large enough to permit the sweep of its revolving rotor blades.

We continue our part of the job as designers and engineers, confident that, with further development of helicopter types, American businessmen will determine many applications in transport and industry where only the helicopter can serve to cut costs, give dependable service and make work more productive. In consultation with such executives, our development program is taking shape today.

Kellett Aircraft Corporation, Upper Darby (Philadelphia), Pennsylvania.

KELLETT HELICOPTERS.

G.E. POWERS THE



For all its simplicity, the aircraft gas turbine was one of the toughest engineering jobs G.E. ever tackled. There were the metallurgical problems posed by the terrific temperature extremes and mechanical stresses encountered. Combustion had to be confined in one thousandths of the volume per lb. required by a power-plant boiler. A fuel system had to be devised that could give uniform performance from sea level to the stratosphere. And the job had to be done fast.

The speed with which G.E. brought the gas turbine to its present state of development is one of the great achievements of this war. It testifies both to the experience G.E. gained in developing the new-fangled turbo-propeller and to the admirable will to make the phenomenal new kind of power succeed.



AIRCRAFT GAS TURBINES

For War... the most powerful propulsion
For Peace... the most promising

"Shooting Star"

WORLD'S MOST POWERFUL AIRCRAFT
ENGINE FORESHADOWS AN AGE
OF FASTER FLIGHT



As the Army Air Force's newly organized P-50 streaks through the skies, there flies with her the workings of an unprecedented era of aerial progress. For here is not only jet propulsion. Here, as a working reality, is the dream of thousands of engineers—a practical, efficient aircraft gas turbine.

Designed and put into production by General Electric engineers, the revolutionary power plant of the Lockheed P-50 "Shooting Star" has demonstrated far-reaching advantages for fighter planes. It has the highest power output of any engine in the air. It is much lighter than conventional reciprocating engines of less power. It is astonishingly simple. It can operate on a wide range of fuels. It eliminates delay for engine warm-up.

Of particular significance, G-E aircraft gas turbines virtually eliminate vibration and noise.

HORIZONS UNLIMITED

Pure jet propulsion is now the ideal power for fighter

planes. Our major effort, so far, has been devoted to perfecting the gas turbine for this use. However, practical-minded G-E engineers envision almost limitless use of aircraft gas turbines on transport, cargo, and private planes of the future, for propeller drive as well as jet propulsion. Here, they will give you combinations of speed plus range that you have scarcely dared to hope for.



The principle of the gas turbine places no such limits on power as do reciprocating engines. Moreover, they will give long life and their best fuel economy even when operating at a high percentage of their maximum power.

As the progress of aircraft gas-turbine propulsion continues, you will find G-E pioneering many of the basic developments which will make planes fly faster and farther—which will bring you comfort and safety to air travel. Apparatus Department, General Electric Company, Schenectady 5, N. Y.

Buy all the BONDS you can — and keep all you buy

GENERAL  ELECTRIC

cleared and probably will not be for some time, but production of Voyager 129s is already underway at Nashville. Of the 3,999 aircraft planned for this year and the next, one-half have already been sold—300 is one block to Western States Aviation Co., Glendale, Calif., distributor for Southern California and Nevada (Aviation News, August 28).

Avenant's first plane is expected off the line on Sept. 5.

V-Axis Pattern—While some companies are chafing at discussing their distribute organization, all show an increasing awareness of strong manufacturer-dealer ties. The tendency seems to be to pattern the system after the successful one in vogue in the automotive industry.

Some expects to appoint more than 40 distributors, with 15 already named. Under them of course, will be dealers.

Piper has selected 50 distributors to date, Republic, 28.

There is a noticeable trend to bring more sales efforts to prospective customers. Although Piper experts to confine its selling largely to airports, Aerona, Taylorcraft and others will have fly-ins show rooms. Republic's employees will be deployed at airports and any winter landing areas.

Demand Control—All manufacturers agree that production will be chiefly controlled by demand. Used to fulfilling tremendous schedules, they are geared to far exceed per-war output. On the basis of existing backlog, most are optimistic regarding the future. Piper has orders totaling 3,999.

Fields Full

Although manufacturers of lightplanes stress that production will be regulated first by demand, they follow up with the assertion that probably next is the lack of sufficient landing fields. Some are convinced that the actual number of airports have just about reached saturation point and that expansion of private flying is not going to cause until there are more fields.

One of the outstanding proponents of this view is W. F. T. Piper, president of the aircraft company bearing his name, who advocates establishment of great numbers of landing fields without extensive air force, but just areas suitable for operation of small aircraft.

—all from individuals, states W. T. Piper, president, and none from dealers or distributors. Piper has been deliberately keeping the backlog. The company now has some \$268,000 of "other peoples' money," and for the moment is not anxious for more.

Taylorcraft has the heaviest backlog revealed in the survey. 1,666 orders. Other firms are reluctant to give backlog figures.

W. K.

'Sample' Lessons Boost Flight Roster

A unique project by Grand Rapids, Mich., manufacturers to build interest in flying among their employees is being endorsed by some industry circles as holding tremendous possibilities for speeding an expansion of private flying.

Under the plan, the business organization purchases "sample" flying lessons—generally, three or four—for their workmen. These are given, and the instruction soldiers use more than 10 months.

Back for More—However, during a period of one year, more than 1,200 people received such an introduction to flying. Of them, 881, or 67 percent, went back for more instruction at their own expense. More than 100 have asked.

The plan originated before the war, with Sam Fletcher, local businessman, out of the guiding spirits. During the war the activity was discontinued, but resumed this summer. One firm, Wintons & Crumpton, makers of refrigerators and stove hardware, issued their pre-war contract and have to date bought 8,906 flying lessons for their employees.

Other companies active in the enterprise are Lear, Inc., Plator Propeller Co., Experts Dye and Stinson, Co., Michigan Bids, Co. and Grand Rapids Motor Coach Co.

Interest—Fletcher, since the resumption of the project, has received enthusiastic letters from aircraft manufacturers. He has proposed to them that they inaugurate the same indoctrination among their employees and attempt to persuade their suppliers to follow suit.

New Glider Plant

Production of aluminum and plywood troop-carrying gliders has been started by Lanier-Kassman

Co. in the Louisville, Ky., plant recently visited by the Curtis-Wright Corp.

The St. Louis glider firm has taken over the north half of the 1,500-foot "high bay" area of the \$10,000,000 plant and will turn out about 100 of the big gliders for the Army, according to company spokesmen.

Big Load—The gliders under contract will have a wing span of 108 feet and carry 40 troops in battle dress, or a 2½-ton truck with personnel and load.

Light Gliders, Engines Marked For RFC Sale

The RFC, disposal agency for the War Assets Administration, has 149 Taylorcraft TG-5 gliders for sale which can be converted into lightplanes by replacing the nose with an engine mount, adding an engine and making other alterations required by CAA.

These gliders were adapted from light aircraft designed at the beginning of the war and have much the same general structural features. A limited number of 65-hp Lycoming and Franklin engines have been set aside for sale with the gliders. Prices have been set at \$299 and the engines range from \$183 to \$455 depending upon the make and condition.

Locations—Sales centers are located at: Ft. Worth; Army Air Field, Albuquerque, N. M.; Thunderbolt II, Phoenix, Ariz.; Cameron Field, Oklahoma City; Olympia Army Field, Olympia, Wash.; Salt Lake Army, Ogden, Utah, and South Field, Augusta, Ga.

Airport Trade Sought In Piston Firm's Plans

Looking toward a future of greatly-expanded use of airplanes, McQuay-Norris Manufacturing Co., makers of piston rings, has put into service its own plant and is concentrating on replacement parts business at airports throughout the country.

The company's plant, a four-phase Fairchild 81, is at present carrying McQuay-Norris inventory to many of the principal airports. Although already one of the largest producers of replacement parts, the firm has in the past paid scant attention to the replacement phase of the business.



Boeing B-29 Superfortresses (above) and Boeing B-29 Superfortresses

Boeing B-29 Superfortresses

Trail-blazer for peacetime flight

The Boeing B-29 Superfortress is something more than the weapon that helped win the war against Japan. It embodies principles that will revolutionize air transport now that victory is won.

Not only has the great Boeing planes in which you may now travel already been designed . . . a military version of the first true super-transport of the future—the Boeing Strato-Cruiser—has broken all records for transcontinental flight, with a coast-to-coast average speed of 385 miles per hour!

Boeing has had more experience in the design and building of four-engine aircraft than any other manufacturer

in the world. Like the Superfortress, the new Strato-Cruiser has four engines—and even greater horsepower will be added.

Like the B-29, it has the extraordinarily efficient Boeing wing, giving it large carrying capacity—plus higher performance and greater economy at operation than any other transport.

Again, like the Superfortress, the Strato-Cruiser benefits from Boeing leadership in atmospheric research and the production of aircraft that withstand other-weather operation. It has improved pressurized cabin—plus other improvements in sound proofing and air-conditioning.

It has all the structural and aerodynamic advances of the last three years, proved in war on Boeing-built aircraft. All the new features contributing to safe navigation, ease of control and dependable performance—plus passenger comfort never before imagined. It expenses as no other commercial airplane has yet done, man's growing understanding of the laws of flight.

Now that peace is here, Boeing principles of research, design, engineering and manufacture will bring you the Strato-Cruiser and other advances in our transport . . . and you may know of any airplane it's "Built by Boeing" is back to best.

MEMBERS OF THE U.S. AIR FORCE: THE FLYING STRATO-CRUISE • THE NEW STRATO-CRUISE
THE MOST TRAFFIC • THE STRATO-CRUISE • THE NEW STRATO-CRUISE

BOEING

New Norseman V Hikes Cargo Load

Latest commercial version of long-used cargo and charter plane adds 585 lbs. to pre-war payload.

A new version of the long-used Nordhavn Norseman cargo and charter plane, now in production, offers greater weight-carrying ability and improved performance.

The only Canadian-designed aircraft used by the U. S. air forces during the war (C-64), the Nordhavn has long been popular with Canadian "back" operators and charter services in the U. S. because of its economy and, for a single-engine plane, load.

Weights—The latest type, the Norseman V, as a landplane, has a 3,160-pound disposable load, 440 pounds greater than the wartime plane and 585 pounds more than the pre-war Norseman. As a seaplane, the V has a disposable load of 2,860 pounds.

A high-wing monoplane, 32-ft. long and with a span of 51-ft., the V is powered by a Pratt and Whitney R1340 Wasp engine, of 600 horsepower, 500 takeoff. It can accommodate six passengers in up-bulkhead chairs, and 720 pounds of cargo, or eight passengers on bench seats, and 585 pounds of cargo.

Large, removable doors on each side of the fuselage give easy ac-

cess to the passenger and cargo compartment. Independent access to the pilot's cabin is possible, likewise through doors on each side. A small belly compartment under the cabin also has an outside door.

Battery Aid—One feature simplifying maintenance problems is a special battery compartment. In older models, the battery was bolted to the floor of the cabin. In the V, it slides out on runners.

New Ports Planned In Wash. and Ore.

Plans have been announced for the construction of three private airports in western Washington and Oregon, all within a range of 300 miles.

Two of the fields will be built in Washington—one at Tacoma, the other at Vancouver, Wash.—by the Northwest Aircraft Distributing Co., of Vancouver. The Vancouver field, just across the Columbia river from Portland, Ore., is on a 345-acre site six miles east of Vancouver.

Varied Facilities—The site has been graded and leveled and a main hangar has been erected. A showroom, shop building, runways and small hangars will be constructed as soon as CAA designates the field as an approved landing area.

A runway is already in use at a

new Tacoma airport, south of the city, and a contract has been awarded for a concrete black asphalt. Later, it is planned to erect 20 smaller hangars.

At Seaside, Ore., a resort some 75 miles from Portland, Irving A. Allen and Elmer Smith, of that city, plan to construct a \$100,000 airport on a 145-acre temporary CAA field. Clearing and grading is under way for a 200-foot-wide turf landing strip about 1,700-ft. long. One feature of this field will be groups of individual cottages for fliers.

Pilot Cabins—Another close-in airport project now under way in the Northwest is a two-runway field three miles east of Seaside. This will be for private fliers and aircraft service operators. Cabins for instrument pilots are also contemplated at this field, as well as club facilities. Runways will be 2,900-ft. by 300-ft.

Joint Airport Plans Set By 2 Counties

A possible pattern for joint airport planning between two or more local governments has been established by Madison and St. Clair counties in Illinois in laying out a coordinated system of airports to be built in the two areas.

On the basis of a new state law which authorizes counties to construct landing facilities financed by bond issues, a joint committee was formed to plan a network of fields throughout both counties.

Lightplane Fields—A report of this committee recommends the establishment of 55 Class I fields, specifically for private fliers, and eight Class II airports which could also be used for local service airlines. The Class I fields would be sod-covered, the others would have sod and paved runways.

Fred C. Parke, chairman of the committee, points out that an airport, in effect, is only one link in a chain of aerial highways. Thus the value of two counties acting jointly to construct a great many fields covering practically every community, rather than concentrating airport building at a few large sites.

French Lightplane

Evidence that France intends to "take care of its own" in the field of private flying, is carried in an announcement by the government that early production is scheduled



battle-proven VIBRASHOCK* available for light planes

Before you choose any radio or electronic equipment for your personal light plane, ask this question: How is it going to be shock mounted? In the past poorly maintained radio equipment has proven a constant source of trouble, expense, and lost flight time.

Unprotected from vibration and shock, the very best airborne equipment cannot stand up for long. Repairs and maintenance of your equipment will actually cost many times the original investment unless shock and vibration is adequately controlled. Present personal plane owners are well aware of this fact.

There is one shock mount that accomplishes this purpose. It is the Robinson Vibrashock suspension. Vibrashock suspensions are the only complete, fully engineered suspensions guaranteed to absorb over 90% of all vibration within the operating range of aircraft. This is an efficiency rating far beyond previous shock mount standards.

Vital airborne equipment on Army and Navy airplanes is supported by Vibrashock. You too can have the same dependable protection against vibration if you mount on Vibrashock suspensions for all your communication and flight equipment. Check with the manufacturers of the plane you propose to buy.

*Trade Mark

ROBINSON AVIATION, INC.

725 Fifth Avenue, New York 15, N. Y.
1717 Wilshire Blvd., Los Angeles 5, Calif.



RE-ENTERS LIGHTPLANE PICTURE:

Built originally by Allied Aviation of Baltimore and purchased by Commemorative Aircraft Inc. (formerly Reardon Aircraft and Engines), of Kansas City, this three-passenger, two-engine, Trimmer amphibian has now been revealed as a Commemorative but in the peacetime lightplane market. Production of the craft is expected in about 90 days by company officials who say the price will be "about" that of a higher priced motor car, compared to the \$20,000 cost of similar models before the war. Lifetime scheduled in the 215-mph. proposed production model feature built-in safety features, aimed at the airborne sportsman, and seats convertible to bunks. Six hundred mile range of the amphibian, according to the company, is attained at a fuel consumption rate of about nine gallons per hour.

Hot shoes for cold propellers . . .



THE ICE FLOWER on the hub of this model airplane propeller isn't as serious as it looks; but fingers of ice, creeping along the blades, were a big worry to pilots for years. The picture was made in a B. F. Goodrich refrigerated wind tunnel in an 80-mile-an-hour wind, which exaggerates the hub ice. But ice on the blades, in actual flight, means loss of power, bad balance, vibration that could even jar the engine loose.

To a pilot, the smaller picture looks a lot better. It's an electrically heated propeller shoe, a new B. F. Goodrich development. It's shown here hooked up to a testing machine in the laboratory. (The wires are part of the testing equipment; they are not on the blade in flight.)

With these shoes on his propeller blades, the pilot simply flicks a switch when he runs into icing weather. Current flows through wires along the shoes' edges. A special conductive rubber carries the current across the shoe, and carefully planned resistances cause the rubber to heat up.

Many other parts of the airplane are protected from ice with B. F. Goodrich equipment. The best known of these are the B. F. Goodrich De-Icers that crack ice off as it forms on wings and tails, keeping these surfaces clean and smooth for safer flying. De-Icers were developed and are made exclusively by B. F. Goodrich.

Years of ice-fighting experience are back of this equipment. It means a safer, more comfortable trip if you fly today or when you fly tomorrow. *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

Skyway or Highway
B.F. Goodrich
FIRST IN RUBBER

for a 140-mph, "tourist plane" designated the 8vo.

Range of the proposed light-plane would be 212 miles and the proposed cost at "little more than that of a high-powered automobile." Doubtful that the plane may embody central innovations is seen in the statement that it may be safely flown by persons of limited flying experience. Although exact capacity of the 8vo is not described, it is said to be easily convertible for ambulance service within a "spacious interior."

CAB Lists Probes On Five Accidents

Stalls on takeoff, icing, and emergency landing mishaps accounted for five lightplane accidents recently reported by the Civil Aeronautics Board. Pilot error was cited in four of the five cases.

Briefs of the accidents and the CAB findings follow.

ACUTE WHITELY. (ND Student Pilot killed.) On Oct. 10, 1945, a Cessna 170A, piloted by John Whitely, 24, of 1000 N. 1st St., St. Paul, Minn., crashed into a field near the city. The plane was on a takeoff run when it stalled and crashed into a field near the city. The plane was on a takeoff run when it stalled and crashed into a field near the city.

CAB FINDINGS: Probable cause of accident was an emergency landing mishap. Pilot error was cited in four of the five cases.

ALABAMA. Commercial Pilot killed. On Oct. 10, 1945, a Cessna 170A, piloted by John Whitely, 24, of 1000 N. 1st St., St. Paul, Minn., crashed into a field near the city. The plane was on a takeoff run when it stalled and crashed into a field near the city.

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Travel By Ad

Examples of what may be a coming boomplace, an light and fuel restrictions are lifted and provide plane manufacturers with a new production. Were given in a recent edition of Washington's Evening Star.

Special among these efforts to share expense on auto trips, in the classified ad section's "Travel Travel" division, were two offers to take passengers on long air trips in private planes. One extended an invitation for two passengers to fly to California in a two-engine craft while the other sought two companions on a flight to Denver. By the next day the offer to California had apparently been taken.

description of the accident. The section still stated no cause.

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Wing Scouts principally for ground instruction. Organized into more than 300 "flights" throughout the country, the tent-size gliders carry on a program of pre-flight aviation activities. As each of the planes is turned over to the Scouts, it will be allocated to one of the 12 Scout regions to be used for one year.

Lightplane Engine Boom Anticipated

By early next year, Continental Motors Corp. expects to be building, in two months, more small aircraft engines than they ever built in an entire year before the war.

In making this announcement, C. J. Stone, president, also reported:

► All but one manufacturer of aircraft carrying engines of 100 horsepower or less have plans to use Continental's new C series horizontal opposed air-cooled engines.

► The new Navy 12-passenger helicopter which was first tested in July by Continental power.

► Lockheed has standardized the new 100-hp radial air-cooled engine for their Ventura bomber plane.

► Continental has a contract to further develop the impulse jet engines for the Air Technical Service Command.

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THE ROOF OF TOMORROW WAS HERE YESTERDAY

Some of the finest roof records for long life and lack of expense have been built up over the past half century by roofs of steel bar joists. In spite of the many improvements which have been discovered or developed during the war, no one has been able to build

any roof that is better able to withstand gusts and weather than these roofs for many years. That is why so many "roofs of tomorrow" like those on airport buildings are being built of Koppers Coal Tar Fash and built.

KOPPERS



Koppers, through its American Hummer Motor Wing Division, is one of the largest manufacturers of piston wings in the world.

Buy War Bonds . . . And Keep Them!
KOPPERS COMPANY, INC., Pittsburgh 19, Pa.



Automatic variable-pitch control for military and post-war planes is obtained with the "Aeromaster" Aerovis-Pratt, produced by the Buckle-Baynard Division of Koppers.

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

Big War Fields Present Challenge

CAA watches closely as small town attempts to find use for "million dollar airport" built for Navy.

By KARL HESS

Civil Aeronautics Administration officials this week were watching a small Texas town to find a possible answer to a new and pressing postwar problem facing many communities throughout the country: "What does a small town do with a million dollar airport?"

► The small town, in this "last take" case, is Comroe, Tex., about 50 miles north of Houston.

► The "million dollar airport" was built by CAA for the Navy and used for training.

First step, upon being informed the Navy would no longer require the field and would turn it over to the local government—Montgomery County, of which Comroe, of about 5,000 population, is the

county seat—was taken by the County Court. Appropriated for maintenance of the field was \$25,000, original cost of the land, to the county, was \$75,000.

Aware that the Comroe problem is one that will soon be facing many other municipalities falling heir to no longer needed military fields built by CAA, the air agency has already begun a series of conferences between county and city officials and CAA specialists from Fort Worth, headquarters of the Fourth Region.

► **Commercial Move**—First government suggestion came from S. K. Trewin, Jr., superintendent of airports for the region. He advised the city to discuss the possibility of leasing the airport to a commercial operator as a step toward making it self-sufficient.

Many hurdles there, of course, is whether Comroe's location and size use potential would allow economically sound use of such an extensive facility.

Other proposals have included cooperative operation with organizations concerned with future

jobs for returning war veterans, many of whom may desire a place in civil aviation.

► **Forecast**—According to CAA, the field was located so that fulfillment of its wartime task would leave it well situated for civilian use. The moderate size was pointed out as to war demands and not inaccurate planning. But, that she still exists as a potential "white elephant" unless carefully handled.

The town's paper has already devoted pages of editorial space to the new civic acquisition, urging immediate planning so that use of the elaborate landing facilities are not lost. Unanimously, however, it adds an opinion that the project couldn't be made self-supporting in five years. "if ever."

As an aid to whatever action the town chooses to take, the paper followed up later by printing the full text of the CAA publication Airport Management. To the end that interested people will digest its contents and take upon themselves the task of seeing to it that Montgomery County is not sold short by neglect of the airport, its physical properties and its future possibilities.

► **Pro and Con**—Town leaders feel the county is already "999,900 ahead" considering the physical value of the plant and its original cost of \$75,000. But opposition leaders claim there isn't enough business in sight to justify spending another 75 cents on maintenance of the field.

What steps will be taken by the people to fix the airport into their lives may well provide a "loser" or a "golden rule" for similar communities, facing similar problems, across the nation.

Air Bums

Smart decision as what to do about the West Coast private flying restrictions last week avoided the formal Japanese signing of surrender terms. It was believed in responsible quarters that some lifting of present requirements would be announced simultaneously with the surrender, and that among these would be abolition of Japanese zones. Complete freedom for private fliers in the immediate future is not, however, certain. As reported last week, some areas might remain closed to facilitate the return to this country of Army and Navy planes and material.

BIGGER AND BIGGER AND BIGGER THEY GROW...



Confidential: Future proposed Model 37 great 324 passenger transport. Speed, 300-400 mph. Size 12 times larger than transport in current active use. On the drawing board today, but in the airport tomorrow.

And with them grows your sales potential

You need it in every morning's newspaper. You see it overhead almost daily. The unprecedented growth of our most rapidly expanding form of transportation.

Forethought U. S. businessmen see clearly the marketing significance of air transport expansion. They are not waiting—they are laying their ground work now. East, Texas, Sooner States, Gulf are fully cognizant of the industry's future market possibilities. So are Goodrich, Goodyear, Firestone, U. S. Rubber Westinghouse, General Electric and scores of other U. S. business leaders are preparing now for what they know lies ahead.

Do you manufacture spark plugs? or pistons? or bearings? Do you sell electrical tools? or new cables? or brake tubes? or any one of a thousand other products this industry needs and uses every day?

Then we implore you to examine this market carefully. Not what it was power—not what it is now under wartime restriction—but what it inevitably will be tomorrow.

Examine the development work being done by the one magazine that serves this field exclusively—Air Transport.

Check the relatively small cost of conducting an intensive advertising effort in this field on the pages of Air Transport.

A new booklet tells the whole story "The Builders of our Swiftest Growing Transportation Industry" is available to interested sales and advertising executives. May we send you a copy? Write Aeronautical Division, McGraw-Hill Publishing Co., Inc., 120 West 43rd St., New York 36, N. Y.

*Shown here for a few of the industrial field and who regularly subscribe to Air Transport.



COVER ALL THE BASES WITH...AIR TRANSPORT-AVIATION-AVIATION NEWS



AIRPLANES—OVER THE COUNTRY:

As an immediate follow-up to its plan to begin floor sales of Ercoupes this fall, Marshall Field & Co. has opened this aviation information booth on the first floor of its Store for Men, in Chicago. Emphasizing ready use to would-be private fliers, and the idea that buying and flying a plane is no longer a tedious and hazy undertaking, the booth exhibits numerous drawings and photos of the Ercoupe plus general information on private flying facilities in and around Chicago. In charge of the booth is Fulton M. Moore, veteran of 10,000 flying hours and numerous pilot training programs.

Three-Unit *Aircar* Design Described

Engineer proposes roadable aircraft combining of automobile chassis, airplane chassis, and body-cabin that fits both.

By BLAINE STURRLEFIELD

A three-part air-and-road vehicle, combining of automobile chassis, airplane chassis, and body-cabin that fits either, has been designed by Herbert D. Roggs of Omaha, Nebraska. The design is named *Aircar*.

The designer expects the car combination will press about 3,200 pounds, and the airplane combination about 2,400. Weight of the airplane chassis is reduced by specification of glass fabric wing and body covering which, the designer says, has been produced by Caring Glass and Lobby-Overs-Ford, and has been used experimentally at Wright Field.

Pusher—The body-cabin contains a rear-mounted engine, which is hydraulically geared to the car chassis for road use, and which drives a reversible pusher propeller for flight.

Roggs, an aeronautical engineer associated with The Glenn L. Martin-Hehrman Company, has done several years research on his design and hopes to produce a proto-

type next spring at a cost of about \$50,000. A company is in process of formation.

Purpose of the designer is to avoid too much compromise between plane and car and to produce a car with adequate weight, and a plane light enough for good performance.

Plane Unit—The airplane chassis is a low-wing monoplane with tri-cycle retractable landing gear, twin booms, fins, and rudders, with inboard stabilizer. It has limited control for spin resistance; brakes and ground steering; lands at 40 mph.

The car chassis has hydraulic drive, through pressure tubing from a pump geared to the engine, which is carried in the body-cabin. When the cabin is removed the pump and fly-wheel compartment are moved back so that the propeller spline is disengaged. The car chassis has automatic speed change and is expected to "crize" at 80 mph. The wheels are individually sprung.

The two-door body-cabin seats four persons and contains a 140-hp Continental air-cooled fuel injection engine. It fastens to either the car or the plane with a cable and lock-out system which is described as fool proof. The engine is expected to give 15 miles per gallon on the ground, and about 10 in the air.



New Roadable Plane Model Probably the first use of glass cloth-balun wood "sandwich" construction in light civil aircraft is contemplated for the *Aircar* *Aircar*, a revolutionary aircraft-automobile combination proposed by Herbert Roggs, of Omaha, and which is shown above in flying model form. First full-scale prototype is expected to go into construction about Oct. 5. Design includes three part: plane chassis, automobile chassis, and body-cabin, interchangeable between the two. In quantity, Roggs expects to sell his new vehicle for \$2,500.

Unit Rental—An *Aircar* owner would own all three units, or he might own only two, in which case he would rent the third unit from a service company. Conversion from plane to car and vice versa would be done with special equipment at a cost of 50 to 70 service stations distributed throughout the country. The change would be made in four or five minutes, Roggs believes.

On a small production basis the designer estimates the cost of all three units at about \$6,000, as a mass basis at less than \$4,000.

25 Private Plane Licenses Awarded

New aircraft certificates have been issued for 25 private type planes, purchased recently from military surplus by firms and individuals.

Last of the aircraft numbers, buyers, make and model of plane and engine, and date of manufacture follow:

NO 14929—Alan S. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14930—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14931—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14932—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14933—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14934—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14935—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14936—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14937—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14938—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14939—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14940—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14941—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14942—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14943—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14944—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14945—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14946—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14947—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14948—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14949—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.
NO 14950—J. A. Aiken, 400 E. Placer St., Sacramento, Calif.

PESCO FUEL BOOSTER PUMP

FEATURING

1. Positive vapor-control in high altitude flight
2. Stabilized flow of bubble-free fuel
3. Trouble-free boating and seal arrangement
4. Self-priming area under extreme conditions
5. Ability to pump the fuel tank dry
6. Variety of installation adaptations

Increased engine power, faster climb and higher altitude capabilities of modern aircraft demand a fuel booster pump having greater and more positive vapor separating characteristics to handle the higher fuel flow under the more severe operating conditions.

To meet this demand, PESCO now offers an entirely new fuel booster pump—a tank-mounted, compact, electric motor-driven, centrifugal pump in various models for either submerged or external installation. PESCO precision workmanship assures the highest standards of performance and dependability. Write today for new "PESCO Vapor Control" Booklet No. 5, PESCO Products Co., (Division Borg-Warner) 11610 Euclid Ave., Cleveland 6, Ohio.

In Aircraft Hydraulics, Fuel Pumps,
Air Pumps, Related Accessories ...

PERFORMANCE POINTS TO **PESCO** FIRST

COMMENTARY

Nazi Radar Research Lag Cited As High War Blunder

Lifting of security restrictions on military use of radar provides evaluation of enemy's development; equipment called adequate but below Allied standards after "fatal" improvement lapse in 1940-42.

The recent lifting of the American blackout on the military use of radar has made possible a general estimate as to how well our enemies, particularly Germany, made use of this miracle of modern warfare.

We know that in 1935 the Telefunken Company in Berlin revealed details of a 10 centimeter "teletype ray" system and it is capable of locating the position of aircraft through fog, smoke, darkness or clouds.

Wicks' System—It was reported that radio beams could be sent upward at a fixed angle from a large group of micro-wave transmitters. After reflection from the hidden airplane (the "target"), the "echoes" were picked up by a group of receivers built in small weather-proof boxes which could be mounted on top of church steeples and tall buildings.

The U. S. Navy, Army Signal Corps, the British, and possibly the Italians had similar developments under way at about this time.

The basic early warning net used by the Germans was known as *Freya* (the Venus of Norse mythology) and was based on 1939. This net and six several variants is comparable to the U. S. Army Signal Corps original ground radar used to similar equipment used by the British.

Warning Network—An extensive chain of such radar sets in France and the Low Countries provided the Luftwaffe with sufficient warning to meet the bulk of the RAF andAAF heavy bomber missions until early 1944.

At this time the Allied bomber strength was such that several staggered missions could be mounted in such a way as to cut down

the effectiveness of the early warning radar.

The year 1939 saw a very useful set put into operation by the Germans. Known as the Würzburg, it was used for searchlight control to spot night bombers, AA fire control, height finding (usually along with *Freya*, which gave early warning but not height), and GCI (ground controlled interception), a system for aiding night fighters).

A Giant Model—By late 1941, a 12-ton giant Würzburg came out, with double the range of the small set and a narrower beam, which made it suitable for GCI operations. Both sets were provided with IFF (identification, friend or foe) which operated with a small transponder carried on all German aircraft.

The operator would challenge the plane whose "tip" appeared on his scope by switching on his interrogator; if he heard a distinctive tone in his headphones, the plane was a "friendly." Improved versions of the Würzburg, available in 1944, made German radar a highly accurate and deadly weapon.

For the *ANW* (air net) to surface was the basic German radar set was known as *Hohentwiel*, with antenna carried ahead of the nose. This set was used in practically all of the types of planes used against shipping, including the *He-111*, *He-177* and *Do-217*.

"Better"—Improved sets with two range-scopes (50 miles, then 5 miles for more detail), and better discrimination, were in use before the end of the European war.

German airborne interception equipment was not developed until 1941. At the start of the war they depended on an infrared de-



B-32 PROPELLERS:

Largest four-bladed hollow steel propellers in quantity production, these giant blades, for the AAF's newest super-heavy bomber, measure 16 feet, 8 inches. Electric reversible, the propellers for the B-32's four 3,200-hp engines are being manufactured in volume by the Curtiss-Wright Corp., Caldwell, N. J.

ones which proved entirely inadequate.

The first AI set was called *Lichtenstein*, and was very similar to the early British AI equipment, which came out sooner. Its elaborate antenna array in the nose created so much drag that speed was reduced by 12 1/2 miles. The latest night fighters (*He-219*, *Me-410*, etc.) had greatly improved AI equipment, with greater range, wider coverage, more discrimination and an airborne IFF set.

Fatal Failure—Consensus indicates that the Germans slipped a cog very badly in their failure to keep up their developments of radar in 1942-43, especially in the micro-wave field, blind bombing devices and more effective search equipment. The Japs were further still behind, but caught up fairly quickly; their ground equipment is far, but the airborne staff has a long way to go.

NAVIGATOR

CAP Chief Reassigned

Col. Earle L. Johnson, national commander of the Civil Air Patrol since the early days of its formation, has been assigned to overseas duty by the Air Forces. During his absence, which is expected to be for several months, Col. Harry H. Blue will be acting national CAP commander. Col. Blue has been deputy commander

N-A-S Internal Wrenching Bolts

COLD FORGED BY "NATIONAL"

Applications subject to unusual stress, where extremely high torque and fatigue resistance are required, call for NAS Internal Wrenching Bolts.

We make them from high-grade alloy steel, heat-treated to 160,000-180,000 p.s.i. tensile strength. The hex socket is cold forged (not machined), resulting in more uniform and better controlled grain flow of the metal. This method affords positive assurance of the required strength on every bolt.

Threads are made by the rolled thread process, producing an unbroken grain flow and consequently greater strength. Thread cannot at the grip has a rounded root, thereby avoiding the sharp step caused by other methods of threading.

The entire shank, underside of head and ends have ground surfaces.

"National's" close co-operation with engineers of the aircraft industry in the progressive development and improvement of Internal Wrenching Bolts has made us a prime source of supply for these important aircraft fasteners.

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THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.



Illustrating two extremes of Emerson-Electric's gear motor bearing sophisticated turret gear for the large Armstrong gun. The latter, mounted from a ship, weighs 40,000 lbs.

All in the day's work...

AT THE EMERSON-ELECTRIC TURRET PLANT

In becoming one of the world's largest manufacturers of airplane turrets, Emerson-Electric has developed many manufacturing processes involving extremely precise standards of accuracy.... Precision gear manufacture has played a vital part in advancing the new art of airplane turret manufacture. Typical of this are the Emerson-Electric made gears illustrated above. Each gear is individually inspected, checked and matched—because a single case of failure or excessive backlash could easily become disastrous in aerial combat.

Emerson-Electric engineering knowledge and facilities are available for the design and production of all forms of airplane armament equipment. Your inquiries are invited.

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Sperry-Lowell Ball Turret functional test fixture at the end of final assembly line.



Emerson-Electric designed and built turret turret.



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AIRPLANE ARMAMENT

FINANCIAL

Peacetime Air Cargo Potential In Main Shipping Groups Listed

Air Cargo, Inc. survey reveals "very definite" pattern for first five post-war years; more than half of formerly rail-carried goods seen going by air in some cases.

A preliminary picture of air cargo potential in 33 important manufacturing industries has been prepared by Air Cargo, Inc. While some parts of the picture are missing, it is complete enough to show that a "very definite" pattern emerges, indicative of the shape air cargo will take in the first five post-war years.

The report is based on estimated express tonnage shipped in 1933 by the 33 manufacturing industries covered. It indicates the estimated diversion of this tonnage to air transportation at each of seven rate levels.

Dollar Value—The industries covered in the study produced commodities with a value of \$23,556,000,000 in 1933, which is approximately 46 percent of the total value of manufactured goods produced. These industries shipped \$13,718 tons (ton-local express tonnage) of product by railway express in 1933, which is 28 percent of the total first class railway express tonnage shipped in that year. The \$13,718 tons shipped were moved 287,000,000 ton-miles at an average rate of 13.5 cents per ton-mile, and yielded a revenue to Railway Express Agency of \$53,469,000.

The following Table A summarizes the estimated diversion of express tonnage to air transportation at each of seven rate levels for the 33 industry groups combined:

Apparent Leads—At all rate levels, the apparel industry will be the largest user of air transportation, accounting for a minimum of 48 percent of the total tonnage shipped at Rate C, up to 63 percent of the total tonnage shipped at Rate X (100 percent above the railway express rate).

The second largest user of air cargo, at most two levels, will be the machinery industry. This industry will produce from 65 percent of the total tonnage at Rate X, up to 59.6 percent of the total at Rate B.

The motor vehicle industry will be the third or fourth largest user of air cargo, producing from 4 percent to 16 percent of the total tonnage.

Film Factor—The motion picture industry will be the third largest user of air cargo at the highest rate level (Rate AA), producing 9.0 percent of the total tonnage at that rate, and the fourth largest user at Rate A, producing 4.5 percent of the total tonnage at that rate, but it will be displaced by other industries as the rate drops. At Rate D, for example, it will be sixth of the 33 industry groups in importance, producing only 1.6 percent of the total tonnage shipped at that rate.

On the other hand, the chemical and drug industry, which ranks eighth at the highest rate level, producing only 3.5 percent of the total tonnage at Rate AA, will be third or fourth in importance at the lower rate levels, producing 5 percent to

8 percent of the total tonnage at rates B or C, and 13 percent at Rate C.

In general, as the rate per ton-mile drops, the industries tend to assume positions as producers of air cargo comparable to their rank as users of railway express. At the higher rate levels, the disproportionately high premium value placed on speed in the shipment of motion pictures, recordings and transcriptions, stereotypes and printing plates tends to give them a position as producers of air cargo higher than would be indicated by the total tonnage of railway express shipped.

Diversion Study—Because of the detailed nature of the study, the 33 industries have combined into 10 industry groups in order to present the data in Table B on the diversion of express tonnage to air transportation of each of the seven rate levels.

Reynolds Earnings Up

A jump of more than \$7,000,000 in earnings for the first six months of 1945, over the similar period of 1944, is reported by Reynolds Metals Co. Consolidated earnings before taxes and special amortization of emergency facilities amounted to \$1,566,076, after provision of \$7,653,000 for taxes, and \$2,358,865 for amortization, net profits were \$2,851,451, as against \$2,312,463 for the same period of 1944. Current earnings are equal to \$3.85 per share on \$1,283,045 worth of outstanding common stock.

GAO Estimated Diversion to Air Transportation

	Express Amount	Rate	Per Ton-Mile	Per Ton-Mile	Per Ton-Mile	Per Ton-Mile	Revenue
	Amount	%	Amount	%	Amount	%	Revenue
1933 Express Tonnage	410,719	100%	587,544,000	100%	10,132	100%	\$43,073,000
Estimated Diversion to Air at							
Rate AA	4,730	1.1%	2,000,000	0.3%	10,132	100%	\$1,027,000
A	10,000	2.4%	4,120,000	0.7%	10,132	100%	1,027,000
B	20,000	4.9%	8,240,000	1.4%	10,132	100%	1,027,000
C	30,000	7.3%	12,360,000	2.1%	10,132	100%	1,027,000
D	40,000	9.7%	16,480,000	2.8%	10,132	100%	1,027,000
E	50,000	12.2%	20,600,000	3.5%	10,132	100%	1,027,000
F	60,000	14.6%	24,720,000	4.2%	10,132	100%	1,027,000
G	70,000	17.0%	28,840,000	4.9%	10,132	100%	1,027,000

GAO Air Cargo Potential For 33 Industry Groups (Based on Railway Express Tonnage Shipped in 1933)

	Express Amount	Rate	Per Ton-Mile	Per Ton-Mile	Per Ton-Mile	Per Ton-Mile	Revenue
	Amount	%	Amount	%	Amount	%	Revenue
Apparel	1,810	0.4%	2,070,000	0.3%	10,132	100%	\$1,027,000
At Rate AA	1,810	0.4%	2,070,000	0.3%	10,132	100%	\$1,027,000
A	3,620	0.9%	4,140,000	0.7%	10,132	100%	1,027,000
B	7,240	1.8%	8,280,000	1.4%	10,132	100%	1,027,000
C	10,860	2.6%	12,360,000	2.1%	10,132	100%	1,027,000
D	14,480	3.5%	16,480,000	2.8%	10,132	100%	1,027,000
E	18,100	4.4%	20,600,000	3.5%	10,132	100%	1,027,000
F	21,720	5.3%	24,720,000	4.2%	10,132	100%	1,027,000
G	25,340	6.2%	28,840,000	4.9%	10,132	100%	1,027,000
Machinery	4,730	1.1%	2,000,000	0.3%	10,132	100%	\$1,027,000
At Rate AA	4,730	1.1%	2,000,000	0.3%	10,132	100%	\$1,027,000
A	9,460	2.3%	4,120,000	0.7%	10,132	100%	1,027,000
B	14,190	3.4%	6,180,000	1.0%	10,132	100%	1,027,000
C	18,920	4.6%	8,240,000	1.4%	10,132	100%	1,027,000
D	23,650	5.8%	10,300,000	1.8%	10,132	100%	1,027,000
E	28,380	7.0%	12,360,000	2.1%	10,132	100%	1,027,000
F	33,110	8.1%	14,420,000	2.5%	10,132	100%	1,027,000
G	37,840	9.2%	16,480,000	2.8%	10,132	100%	1,027,000

(Continued on page 87)

Air Corps Potential For Industry Designs
Based on Survey Expense Through August 1, 1945

	Time		Travel		Average Rate		Revenue
	Amount	%*	Amount	%*	Per Day	Per Mile	
Motor Vehicles							
At Base A.A.	400	9.6%	465,000	10.7%	15.50	245,000	245,000
At Base B.A.	1,100	26.5%	1,100,000	26.5%	11.00	1,100,000	1,100,000
At Base C.A.	2,100	50.0%	2,100,000	50.0%	21.00	2,100,000	2,100,000
At Base D.A.	3,100	74.0%	3,100,000	74.0%	31.00	3,100,000	3,100,000
At Base E.A.	4,100	97.5%	4,100,000	97.5%	41.00	4,100,000	4,100,000
Motor Vehicles							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000
Printing and Publishing							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000
Non-Motor Vehicle Products							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000
Professional and Technical Instruments							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000
Chemicals and Drugs							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000
Locales and Locality Products							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000
Radio Products							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000
Textiles							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000
Recreation and Transportation							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000
Others: Tools and Hardware							
At Base A.A.	100	2.4%	100,000	2.4%	10.00	100,000	100,000
At Base B.A.	200	4.8%	200,000	4.8%	20.00	200,000	200,000
At Base C.A.	300	7.2%	300,000	7.2%	30.00	300,000	300,000
At Base D.A.	400	9.6%	400,000	9.6%	40.00	400,000	400,000
At Base E.A.	500	12.0%	500,000	12.0%	50.00	500,000	500,000

*The percentages in these columns show the proportion of air Corps in the industry group which originates in each industry.

Industrial Research Lauded By Wilson

The decisive character of industrial research was cited as the outstanding lesson of the war by Eugene E. Wilson, president of the Aircraft Industries Association, who pointed to the atomic bomb as the ultimate proof of his argument.

Wilson told members of the Town Hall in Los Angeles that the advent of the atomic bomb and of self-propelled and guided missiles focuses less emphasis on the airplane as a weapon, but he pointed out, at the same time, the enormous expansion in air transport reveals the expanding importance of the airplane as a vehicle.


New Factors—Wilson resolved himself into a struggle to assure freedom of movement to himself and to deny it to the enemy," he said. "The record of World War II clearly shows that air power has introduced completely new strategic factors of fundamental importance."

"While ground forces have remained the only means of seizing and holding a land objective and seaborne forces have continued to exercise their decisive influence through command of the sea, air forces have exercised control over both land and sea communication."

Applied Needs—Wilson said he believed that everyone now recognizes the need for scientific research, but, it must be kept in mind, there is an equally compelling necessity for applied science. That, he said, is the largest part of the job and added that its success rests with industrial leaders.

He warned it will be necessary to keep the full engineering staffs of the entire aircraft industry working at top speed if America is to retain its preeminent place in aviation and safeguard the nation.

"We have made a notable record of quantity production, but in doing so we have been prodigal with our resources of men, money and materials and need now to re-emphasize quality," he said. "Our scientific schools must re-open their interrupted course. Trained engineers now in service must get back into industry. The air forces, the airlines, and the aircraft manufacturers must collaborate in speed development, so as to keep in the forefront of technological progress and be ready to expand again in case of emergency."



DEPENDABLE

Beech Aircraft

Beechcraft Wilson, owned by Mountain States Aviation in light over Rockies.

BEACHCRAFT ARE DOING THEIR PART.

WICHITA, KANSAS, U.S.A.

Photo by Hans Sprengel

Full Nonscheduled Registration Proposed by CAB Examiners

More would eliminate distinction between scheduled and nonscheduled operations; permission to operate without certificate of convenience and necessity retained; replacement of present exemption order with fixed base classification urged.

By MERLIN MICKEL

Elimination of the distinction between scheduled and nonscheduled air operators was proposed last week by Civil Aeronautics Board examiners who recommended that the Board replace the present nonscheduled exemption order with another classifying fixed base operators and requiring their full registration with CAB, but still permitting them to operate without a certificate of convenience and necessity.

In their report after hearing in the Board's study of nonscheduled air services, Examiners William J. Madden and Curtis G. Henderson said they could see "no sound reason why a fixed-base operator cannot offer service to other points (than those on certificated routes) in such volume and as frequently as the traffic will bear," even if on a non-scheduled basis.

Objective.—In their suggested substitution for Section 252.1 of the economic regulations, the present order exempting nonscheduled operators from certain certificate requirements, they sought to:

- Provide means whereby the Board and the industry generally may obtain accurate information with respect to transportation operations other than those conducted by the existing carrier.
- Preclude development of unauthorized services in competition with those now or hereafter authorized by certificate of public convenience and necessity.

Allow the greatest possible latitude for the development and growth of the transportation industry of fixed operators.

On the first of these, they suggested that air carriers, other than those with authorized certificates, register with the Board, name, place of business and other essential data, plus report of six months

intervals on volume and nature of activity.

On the second, there were three

Proposed Fixed Base Carrier Rules

Civil Aeronautics Board examiners in CAB's investigation of nonscheduled air services have recommended termination of the existing nonscheduled exemption order and substitution of the following classification and exemption of fixed base air carriers:

(a) Classification of fixed-base air carriers—Class is further established, within the meaning of section 252.1 of the Civil Aeronautics Act of 1938, as amended, a classification of air carriers to be designated as Fixed-Base Air Carriers. Any person who is a citizen of the United States and whose carrier operations are limited to service to one or more points, or who complies with the terms and conditions of this regulation, or who complies with this regulation as may be hereafter promulgated by the Board, may be deemed to be a Fixed-Base Air Carrier.

(b) Any person desiring to operate as a Fixed-Base Air Carrier must file with the Board a statement of such operations in file with the Board. The statement shall contain the following information:

- (1) The name and address of the carrier.
- (2) If a corporation, the names of its officers and directors and the names of its principal officers and directors.
- (3) The names of the principal officers and directors of the carrier.
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possible solutions. These were prohibition of all service by other than certificated carriers between points on certificated routes; limitation of the size of aircraft to be used by other than certificated operators for air transportation; and restrictions on frequency of trips between points where certificated service is available. The third was selected by the examiners as the most desirable solution.

Casual Limit.—They proposed that trips providing certificated routes be limited on a "casual, occasional and infrequent basis," and suggested 10 trips a month for each base. "This," they stated, "should allow sufficient latitude for any individual operator and still prevent a service between certificated points on a frequency exceeding one trip every third day."

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As an additional safeguard, to prevent pooling of permits frequently by two or more fixed base operators at the same point, Madden and Henderson suggested that all such carriers be required to file for CAB approval or disapproval, copies of all such agreements.

To assure freedom for fixed-base air transport development, the third objective, they concluded that as distinction should be made between scheduled and nonscheduled services. If protection is provided for establishment of certificated routes, "the business is there, and there is as possible barrier to the existing competitive system, it would be doing a disservice to the public to preclude the carrier from providing the service with a degree of regularity and from advertising the air and hour of departure and arrival."

Rules Drafted.—A draft of a regulation the examiners believe will attain the three objectives was attached to the report. While referring to "nonscheduled" operations, it was explained the regulation intended to apply to operations "we have elected to call fixed-base air carrier operations."

The Board initiated the nonscheduled investigation in July, 1944. Public hearings, at which 34 witnesses appeared, were held March 27, 1945, through March 29.

BNF Route Marks N. Y. Area Hearing

Main issue to be decided by the Civil Aeronautics Board in the Cincinnati-New York consolidated case, as hearings ended last week, appeared to be whether the service in the Cincinnati-New York area should be granted.

A directive was expected immediately concerning the present four classes of operations into New York already have gone out to regional airports offices to be stricter in granting permits.

Trail Seen.—Termination of automatic priorities and those previously granted, voluntary personnel on first and last legs of the route which is almost would require an actual surveying of military applications—was understood to be the main issue.

Air Transport Association figures show that of the 11,234,944 passengers carried by domestic airlines during the three years ended May 31, 1945, \$40,945, or 94 per cent, traveled on priority.

Other applicants in the proceeding are American Airlines, Chicago and St. Louis; Air Lines, Colonial Airlines, PCA, TWA, and United. Extension H. Hertzberg Spang set Oct. 1 as deadline for preliminary briefs.

Detroit-Miami Route Awarded Eastern

Great Lakes-Florida decision also grants southwest coast-to-coast operation area Chicago to Delta.

Eastern Air Lines was designated last week by the Civil Aeronautics Board to provide direct one-carrier air service between Detroit and Miami Delta Air Lines was selected for additional one-carrier operation between Chicago and Miami.

Both will provide North-South service over a large area heretofore served only by East-West carriers.

Eastern Extension.—The Board's Great Lakes-Florida decision granted Eastern an extension of AM 6 from Columbus, S. C., to Detroit, via Charleston, Winston-Salem, Greensboro-Spartanburg, N. C., Roanoke, Va., Charleston, W. Va., and Akron and Cleveland.

Priorities Going

Preliminary steps toward the eventual elimination of air priorities were taken last week. Automatic termination of the priority system varied from New York, the first of next year, with the latter the issue likely to be the first.

As an immediate move, high military officials were conducting reviewing of the airport. A directive was expected immediately concerning the present four classes of operations into New York already have gone out to regional airports offices to be stricter in granting permits.

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Keen for substitution of the latter two cities for Columbus and Toledo, Ohio, was the most necessary, by Examiner H. H. Newman in his report to the Board (AVIATION NEWS, Dec. 11, 1944). Service to Warren-Salem and Cincinnati may not be provided by the same flight.

Delta was awarded extension of AM 54 from Cincinnati to Chicago via Anderson-Muskegon-New Canaan, Ind., and from Knoxville, Tenn., to Miami via Asheville, Greenville-Spartanburg, Augusta, Savannah, and Brunswick, Ga., and Jacksonville, Fla.

Delta Addition.—Delta was also authorized to serve Charleston, S. C., by extension of its route from Knoxville to Charleston via Asheville, Greenville-Spartanburg, N. C., and Columbia, S. C., but may serve Miami only as flights enroute or terminating at points north of Jacksonville. Only the Cincinnati-Chicago extension was recommended by the examiner.

Action on applications by Eastern, PCA, Delta and Virginia-Central Airlines for Chicago-St. Louis service was deferred pending consideration of applications for local service in this area in the Southwestern States case. Also deferred for action in the latter case were applications of State Airlines, Southeast Airlines, and Virginia Central for new local service, and Eastern's proposal to add 10th class to AM 5, AM 6, and AM 16. All other applications were denied.

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CAA Radar, VHF, Landing Tests Point to New Airline Techniques

Instrument approaches at frequency of contact weather traffic seen near for all carriers; daytime beacon visible through 6,000-ft. of overcast among other new developments revealed at special demonstration.

By ALEXANDER MCGURLEY

New developments in precision application of radar, combined with new Very High Frequency (VHF) radio equipment are expected to speed up instrument landing procedures to a frequency of landings comparable to that now made in contact weather. Civil Aeronautics Administration technical engineers disclosed to airline, military, and press representatives during a recent demonstration at Indianapolis municipal airport.

Current instrument landing procedure requires from 15 to 25 minutes per plane, permitting only 4 to 6 aircraft to land per hour on a single runway, while good weather capacity for one hour is approximately 30 planes.

The Show—Using VHF, the CAA demonstrated an instrument approach and landing procedure which enabled six planes to land in three-minute intervals from a "stack" at a radio height marker 10 miles from the airport. The procedure was essentially similar to that used in a recent CAA demonstration at Washington National Airport (AVIATION NEWS, July 23).

except that VHF was used instead of standard low frequency radio, the intervals were cut from four to three minutes, and the simulated ceiling was dropped from 400-ft. at Washington to ceiling zero at Indianapolis.

The demonstration, however, showed a technique which is still an intermediate step in the final instrument landing procedure and which will use radar-type screens in central towers in combination with VHF communications between plane and tower. Screens showing vertical and horizontal cross sections of the area within 30 miles of the airport are being developed. Glen Gilbert, CAA assistant administrator, said that equipment now in use at the Indianapolis CAA experimental station was built up from military radar equipment, but that it was hoped to have a unit specially built for control tower use under service test soon.

Meanwhile, it is expected that the three-minute landing rate can be attained as soon as aircraft become equipped with VHF receivers, probably late this fall. VHF radio

VHF Outlook

While airline planes are expected to be equipped at the rate of one month to one Very High Frequency radio communication in making instrument landings, four or five years will elapse before all radio ranges at the nation's airports will be so equipped.

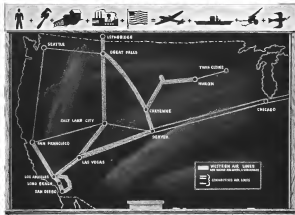
Civil Aeronautics Administration already has installed VHF on a number of the ranges, but the complete job of substituting the new frequencies, which will give freedom from static and interference, will require many months. In the interim, many planes probably will be equipped with both intermediate frequency and VHF receivers.

equipment has been installed at CAA control towers at 50 major airports, but its use is held up by lack of receiving equipment among the carriers. Now that the war has ended, such equipment is expected to become available rapidly.

Airport List—CAA approach procedure for instrument landings is in use in the meantime at 20 of these airports, but on low frequency voice channel, and has meant a reduction in arrival time from approximately 15 to 20 or five minutes per plane. By mid-September the system is to be in use at all 60. Those presently using it are Alameda, Bangor, Maine; Charleston, S. C.; Chicago, Dallas, Fort Worth, Kansas City, Long Beach, Calif., Montreal, Que., Nashville, Norfolk, Pittsburgh, Portland, Ore.; Presque Isle, Maine; Richmond, Va.; San Diego, St. Louis, Seattle, Tampa, and Washington.

A frequency of approximately one minute for instrument landings may be attained when the bringing into general use of radar screens in control towers, it was predicted.

Disclosure was made that the Indianapolis CAA experimental station, in operation since 1929, is planning considerable expansion in order to intensify its research activities, increasing the present staff of 22 to more than 100 employees. Currently the station leases approximately 160 acres on the edge of the airport, which includes 25 sites for various facilities such as experimental radio installations. The city of Indianapolis is preparing to construct a \$1,993,000



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General traffic office: 510 W. 6th Street, Los Angeles 14



FRANCE'S NEW TRANSPORT:

This 12-ton, non-engine transport plane, the Bellatrix, is the latest French transport model. First of its type constructed in France, it has a top speed of 380-mph and a 257-mph cruising speed. Built for the sub-atmosphere, it has an insulated cabin. Non-stop flight range is 1250 miles. The Bellatrix was designed after the fall of France, and hidden under camouflage until after France's liberation.

hangar for use of the CAA in addition to its present facilities.

Other interesting new developments at the Indianapolis station, displayed and demonstrated to the visitors, included:

► A transmissometer, used to measure the extent to which the atmosphere will transmit light, to establish a more scientific basis of measuring visibility. The device uses a narrow beam of light carefully calibrated and directed toward a photoelectric cell receiver which measures the light and records its value, something after the manner of a photographer's exposure meter. Two transmissometers, in use, throw their beams, respectively, 350 meters and one kilometer. Eventually it is expected every major airport will be equipped with such a device, with an indicator in the control tower showing the visibility.

► Three new types of approach lights, the Army Barlow system, a Westinghouse system, and a Leland Electric system. The Army and Westinghouse systems are currently installed on the approach to one runway for comparison, while the Leland lights are still in an early stage of development. The lights can be operated at various brightness levels, depending on visibility requirements.

► A high intensity flashing beacon for daytime use, consisting of four Xenon gas lamps which flash in series, for a total period of one-half second, every second. Each of the flashes is approximately 30,000,000 candlepower. The light is visible through 6,000 feet of overcast in the daytime.

► A glide path indicator for instrument landings which shows a flashing light from the glide path radio station at the airport. If the pilot is on the correct glide path, the light appears white, if he is above the path it is green and if below it is red. The light changes from green to red in less than one degree.

► Use of an azimuth selector as a directional radar range which enables the pilot to determine his bearing in relation to the range or to fly a visually indicated course in any direction from the range. The pilot sets the pointer on the azimuth scale at his desired course and centers the left-right indicator, or, if he wishes to determine his bearing from the range, he turns the azimuth pointer until a green "azimuth" signal light flashes on the left-right indi-



Council President: Dr. Edward P. Warner, Vice-Chairman of the Civil Aviation Board, has been elected president of the Interim Council of the Provisional International Civil Aviation Organization. Under PICAO's constitution, he must resign from the CAA.

cator centers. The reading on the scale was then he bearing. If he flies toward the station, the green light will go out when he passes the station and a red light will go on.

A dinner meeting with addresses by Gilbert, Henry I. Meltz, chief of the Indianapolis station, Donald M. Stuart, chief of CAA technical developments; Wallace Winslow, Indianapolis airport manager; C. F. Carran, new Indiana state aeronautics director; and Senator Homer K. Capehart, concluded the two-day session.

Interim Air Council Marked By Accord

First meeting of PICAO group indicates bright prospects for orderly and rapid development of world aviation.

A notable degree of unanimity and swift progress in handling the large number of primary organizational problems have characterized early meetings of the first session in Montreal of the Interim Council of the Provisional International Civil Aviation Organization (PICAO), set up at last fall's International Civil Aviation Conference at Chicago.

The general accord evidenced is probably the most important aspect of the deliberations since the meeting opened Aug. 18. For on the successful functioning of this new body depends the prospect of

orderly and rapid development of world air transportation.

► **Officers Named**—During the first week's meetings, PICAO elected and appointed its principal officers, reached informal accord on the question of duration of sessions, named temporary committees to study and report on final organization, finance and personnel, and began consideration of the U. S. Government's review of member-states' recommendations on the technical annexes approved at the Chicago conference.

No surprise to anyone was the election by acclamation of Dr. Edward P. Warner, former U. S. delegate, to the presidency of the council. Dr. Warner, who is now required by PICAO's constitution to resign his position on the Civil Aeronautics Board, was considered by far the ablest man to head the new organization. He was succeeded as American delegate by Col. Gerald Rughly, U. S. alternate and former chief of the Army Air Forces international branch.

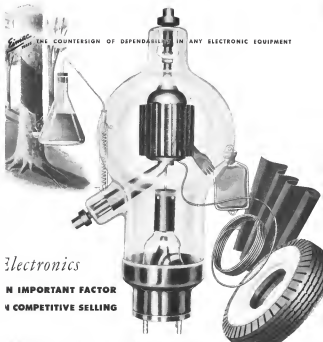
Also unanimous was the appointment of Dr. Albert Roper, of France, for 25 years secretary-general of the International Commission on Air Navigation, to the key post of secretary-general of PICAO. Dr. Roper, now in London at the ICAN plenary session, has advised his acceptance and is expected in Montreal today.

► **Vice-Presidents**—Three vice-presidents elected were: Dr. F. H. Capen van Elssel, Netherlands delegate, Dr. K. N. Chang of China, and Dr. G. E. Barnes, Colombia. Temporary committees on organization, finance, and personnel were set up under the respective chairmanships of Sir Frederick Blevins, United Kingdom; Sir Gurnath Bhowmik, India; and Dr. Jan Renner, Czechoslovakia.

These committees, Dr. Warner pointed out, will be stimulated. They will pave the way for the establishment of the all-organizational standing committees on air navigation, air transport, and convention in international civil aviation.

From early discussion on the duration of PICAO sessions, there emerged general agreement that council business, together with technical committee work, would be a full-time job for delegates. Because of the quantity and urgent nature of the business of the organization, it was considered undesirable to have any considerable break in continuity. It is expected the present session will end early this week and adjourn in Oct. 1.

► **Budget**—PICAO's budget is ex-



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What effort have common carriers made to reduce wasteful competition?

Plans for greater coordination of terminal facilities between carriers of the same and other types

'Integration' Blasted By ATA President

Competition among the various forms of transportation must be retained if the public is to benefit from full development of all methods of travel, Stuart G. Tipton, acting president of the Air Transport Association, said last week in a reply to advocates of transportation integration.

In a talk before the aviation section of the New York Board of Trade, Tipton directed his remarks particularly to the Transportation Association of America, whose executive vice-president, Donald Conn, told the same group last month that TAA could not see why highway, water, and rail carriers should be precluded from common interest in air carriers.

Air Advantages—Citing instances in which air travel is cheaper than by rail and Pullman, Tipton promised more such airline advantages in the future. He recalled that the 18 major airline members of ATA have about 500 new planes on order or option, to make a total of 1,000, compared with 250 in the domestic fleet before Pearl Harbor. He showed the group that "better accommodations than the passenger ever dreamed of" will feature the larger flights.

Improvements and rate reductions, the ATA head said, are in

sight because the airlines hope to divert to themselves as much of the total travel as possible. "The passenger or shipper, if severe required to depend upon a transportation monopoly, would have to get along with the present antiquated Pullman cars, the present obsolete buses and trucks, and he would be riding in a 20-passenger DC-3 for a very long time."

Continuation of competition among the various forms of transportation, Tipton asserted, means that the general public will completely control their development. But, "if this competition is eliminated the general public loses that control and turns it over to a great monopoly," he declared.

Federal Control—Saying that it was the view of those in aviation that partial integration as "just as bad" as total integration, he added that "I can see no better way of getting government ownership, and quickly, than by creating eight or nine great transportation monopolies over which the general public can not possibly have any control."

Continent-Wide Weather Code Discussed By ATA

Proposals for a universal weather reporting code for all of North America were discussed last week at a meeting of the Meteorological Committee of the Air Transport Association with Weather Bureau representatives from the U. S. and Canada.

Consideration of the code, which would be the same for the U. S., Canada and Mexico, was to follow a regular meeting of the committee at Chicago. Miscellaneous problems also were on the agenda for conversations between the committee and representatives of the

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Regulating Fixed Based Carriers

FOR THE FIRST TIME in any periodical, the complete text of CAB's proposed safety regulations for all non-scheduled air carriers in interstate, foreign and overseas operations appears in this issue of AVIATION NEWS, beginning on Page 18.

The draft, which would become Part 42 of the Civil Air Regulations, is being distributed for comments. If its provisions were adopted, every aircraft service operator would find himself subjected to federal controls and regulation as soon as he sought to make one commercial transport flight across a state line, and it appears likely that far less than half of today's estimated 15,000 to 20,000 operators would be able to conduct—if they so wished—any commercial interstate non-scheduled carrier service of passengers or cargo.

Although the Civil Aeronautics Act of 1938 has economic jurisdiction over all non-scheduled commercial carriers, a Board order has been in effect since October of that year exempting them. An examiner's report issued last week, following the Board's economic investigation of non-scheduled air services, expresses serious but not full repeal of this exemption order. A classification of fixed-base air carriers would be set up. Each such carrier would require an air carrier operating certificate, which would mean accordance also with provisions of the final safety provisions of the new Part 42.

Naturally, both the proposed economic and safety regulations, as they now stand, would restrict the present unlimited freedom of operation in the non-scheduled field. There will be some protests that there

is still no necessity for any regulation. The NACA, however, is convinced that some jurisdiction by the Board is necessary in the interest of public safety and of the operators themselves—provided that it is taken regulation only.

We believe the examiner's report is essentially an excellent document, with commendable consideration for the industry's problems. The new safety regulations proposed for Part 42, however, appear drastic and restrictive in some particulars, and could throttle this new industry in this vital shakedown period when so much wisdom is necessary in determining the extent of regulation.

As has been contended on this page before, however, the CAB and its Safety Bureau show every sign of consultation, cooperation and understanding of operators' problems.

We believe several important changes in the present Part 42 draft may be possible, and that some provisions can be eliminated. The entire part can probably be shortened. But CAB will demand good reason from a united and determined industry. Operators will make a sad error if they fail to unite, or if they stubbornly refuse to realize that some sort of regulation is inevitable, or if they do not come to Washington ready to give and take.

If ever they needed to stand together and merge their collective intelligence and remain clear headed, it is in the next few months. Despite anything else that may be said, they now can have more to say—if they so decide—about the extent of the regulation which will be put on them than does the CAB.

ROBERT H. WOOD

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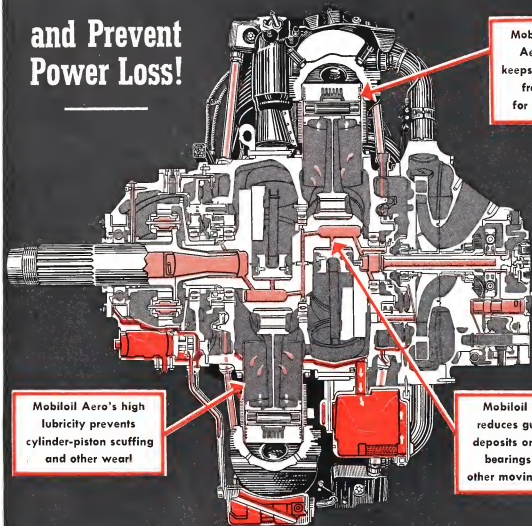
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